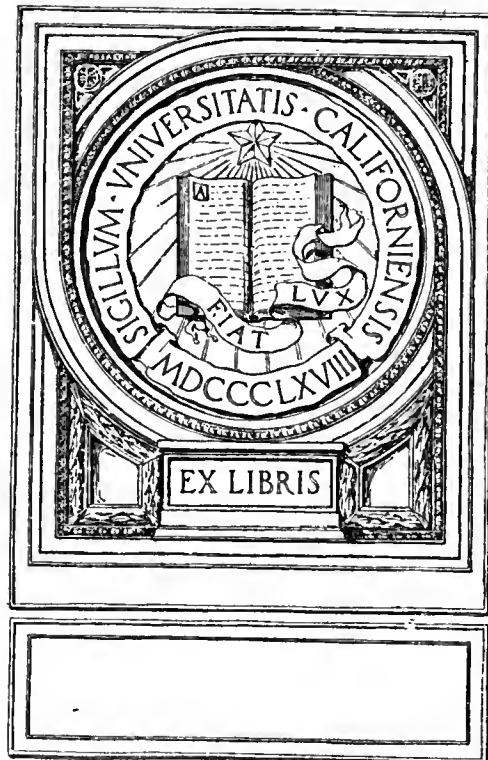


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PROCEEDINGS
OF
THE CONFERENCE
ON
VALUATION



SPECIAL CLOTH BOUND COPY
OF THE
UTILITIES MAGAZINE

This bound number contains the Proceedings of the Conference on Valuation, held in Philadelphia, Pa., November 10th to 13th, 1915, under the auspices of the Utilities Bureau.

THE UTILITIES BUREAU
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THE UTILITIES MAGAZINE

VOL. I—JANUARY, 1916—NO. 3

PROCEEDINGS OF THE CONFERENCE ON VALUATION

HELD IN PHILADELPHIA NOVEMBER
10TH TO 13TH, 1915. UNDER THE AUS-
PICES OF THE UTILITIES BUREAU

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OPENING REMARKS

BY MORRIS LLEWELLYN COOKE

Director of Public Works, City of Philadelphia; Acting Director of the Utilities Bureau

THE values and near values which this Valuation Conference held under the auspices of the Utilities Bureau was called to discuss, total tens of billions of dollars, including as they do the property of all gas, water, traction, electric, telephone and telegraph companies together with the steam railroads.

Until the time of the Mayors' Conference, held about a year ago—resulting as it did in the formation of the Utilities Bureau—no forum existed devoted primarily to the competent and free discussion of utility problems. Even had there existed such a debating ground, the cities of the country stood so far aloof from each other in utility matters, and correspondence between interested citizens was so difficult, that there was afforded no means of passing out information about even well-established standards and policies. Today this is all changed. Through the UTILITIES MAGAZINE, our lists of thousands of city officials and others specially interested in utility matters and our corps of consulting experts, the Utilities Bureau has become an influential agency not alone for the study and solution of utility problems, but for the education of the cities of America in these matters.

Our first conference was devoted to the whole utility field and a long list of papers was presented bearing on ownership, operation, rates, franchises and regulation. This conference is limited to the one question of valuation. It is our plan to call from time to time other conferences at which there can be taken up in an authoritative manner other individual problems which go to make up this great utility problem—transcended in genuine importance in my opinion by no other problem of American life except the liquor question.

The importance of the valuation feature in this field has been emphasized by the companies themselves rather than by the community. And on the company side it is a point of special interest to those who plan the financing of utility companies and who market their securities rather than either to those who operate these properties or the actual investor—however much these last two may have at stake in the fair settlement of the questions involved. As far as I know there is no desire anywhere to keep from the actual investor a fair—even a full—return on the money actually invested in this group of properties.

Throughout the utility industry and especially as to these question of valuations, there is the widest diversity of opinion even as between conservative men, representing, on the one hand, the public point of view

and, on the other, the attitude of the owners of utility securities. The controversy between the reproduction theory of value—as opposed to the historical or cost value—is a case in point. Most if not all of those who devote their time exclusively to upholding the public side of these questions adhere to the principle that after all is said and done the amount of cash honestly invested in a property is the one best test of its fair value, however many other important considerations it may be well to take into account. On the other hand, it must be admitted that those who have their millions invested in these properties hold just as tenaciously and even more unitedly to the theory that we should estimate the value of a property very largely by a more or less theoretical computation as to what it would cost to reproduce it.

Again, in the matter of depreciation, we have good men on the public side who advocate following what used to be considered a proper—certainly a conservative—practice in industry of writing off such heavy depreciation as to make the plant stand, after a few years, at a ridiculously low figure on the books. On the other hand, I have recently received a lecture of a well-known college president who works—sometimes at \$1,000 a day—for the utility companies, which seems to argue that to depreciate a utility property is old-fashioned. Then as to the value of the franchise itself, as to the mechanical methods to be followed in making the inventory and in almost every other matter, we seem to be as far apart as the poles.

Now much of this results from our not having the facts. Some of it comes from the public not knowing the facts we have. Some of it undoubtedly comes from pure cussedness on both sides. I don't know that the Utilities Bureau can look forward to reforming in any large way the temperamental tendencies of either the friends or the enemies of the square deal in this field. But there is a tremendous work we can do in the development of sound policies in all these matters and in the establishment of standards wherever they are possible. We have an even greater work to perform in interpreting all these technical matters to the lay public.

Following the practice used in the Mayors' Conference, every effort was made to give the representatives of these private utility interests the fullest possible opportunity to be heard at each of our sessions. Every person even discussing a paper was asked to discuss the topic as well as the paper. In order that the volume of transactions of this conference may be as com-

plete as possible, the authors of papers and prepared discussions will be permitted to amend or add to their contributions, even after the close of the conference. We want the record of these meetings to be as illuminating as possible from every point of view. While the conference was called with the object of developing fully the public view, to have the opposite side ably presented, as is the case, can only assist in developing the wise course for the public in all these matters.

The private interests are never without able champions in all these matters. Too frequently the public interest has been almost ignored in these discussions.

This conference was planned on the assumption that what is fair, and what is true, and what is honest, and what is for the upbuilding of our great country and the well-being of its living and unborn millions will, in the last analysis, conserve the private as well as the public interest in these properties.

A CRITICISM OF THE REPRODUCTION THEORY OF VALUATION

BY JOHN M. ESHLEMAN

Lieutenant Governor of California, formerly President of the California State Railroad Commission

"All that is beneficial in property arises from its use and the fruits of that use; and whatever deprives a person of them deprives him of all that is desirable or valuable in the title and possession. If the constitutional guaranty extends no further than to prevent a deprivation of title and possession, and allows a deprivation of use and the fruits of that use, it does not merit the encomiums it has received."

SO SAID Justice Field in his strong dissenting opinion in the *Munn* case (*Munn vs. Illinois*, 94 U. S. 113), and although history has demonstrated the correctness of the determination of the majority of the court in that celebrated case and the incorrectness of the conclusions of Justice Field, still the statement here quoted stands unchallenged and is a correct statement of an economic principle.

There is no difference whatsoever between the reduction of the income of a property by 25 per cent and the taking away of one fourth of the property from the owner as far as beneficial results are concerned. Yet whenever government reduces rates government does just this, and destroys value, if you please, as commercially understood. What Justice Field did not desire to admit was the right of government so to destroy value; and even at this late date the majority of utility lawyers and utility commissioners apparently, though perhaps they do not recognize the fact, still assume the position of Justice Field.

It is unfortunate from the standpoint of clearness that the term "value" has ever entered into the discussion of the regulation of utilities. It has no place there and can not, in the nature of things, be an element to be considered in solving the problems that must be solved either in fixing rates or determining a price which shall be paid for a utility property. Value is at most but comparative. In fact it is always personal and subjective, and varies with the use to which the valued object is to be put, while price is at

all times objectively determined. I am not here speaking of the confused definitions of these terms that innumerable court decisions have produced, but of their philosophic and economic significance, independent of the confusion that attaches to them in utility discussions.

Plato, speaking through Socrates, points out that in order to know whether or not a thing is good we must first determine the use for which it is intended. The work of a knife is cutting, and an instrument may be very good for cutting and still not serviceable at all to be used in writing, for example. And in determining the comparative worth of two instruments we must always compare their worths in reference to the same function, but no instrument has ultimate value except it be measured in the need of the one desiring to use it. The worth of a thing to an individual will be determined by that individual in view of the necessity of his having it and the price determined by the power of the one possessing it to withhold it or its substitute from him.

Let us assume, for the sake of argument, that the desire to preserve actual physical life in an extremity will ordinarily cause the surrender by the person involved of more possessions not directly useful for the prolongation of life than will any other motive. Assuming this to be true, the one in possession of the only supply of food can always take from a person in dire need of such food all of his other possessions. Thus we see that value, viewed subjectively as it ought to be, is always determined comparatively and personally. Comparatively, because the sacrifice that will be made by the one in whose mind the value is fixed is determined by the sacrifice that must be made to secure a substitute for the thing valued; and personally, because the ultimate sacrifice that will be made to secure the object is determined by the estimate the one valuing

puts upon the desirability of his condition in possession of the object and not in possession of it. Price, therefore, when determined independent of cost is merely the money or barter equivalent of the value thus determined. Its maximum is limited solely under certain conditions by the resources of the buyer; its minimum under certain other conditions may even be nothing. In the case just referred to, the one in possession of the sole supply of food if so minded might take all the one in need possessed, but plainly the amount that could be taken as the price would be determined and limited absolutely by the amount possessed by the purchaser and would have no relation whatsoever to the cost to produce the article sold and might be many times more, might be much less than such cost price. The price thus determined for lack of a better name I shall call threat price. And whenever in any price asked for any commodity there is present partially or entirely as determining such price this element, we shall recognize the price to be received by such owner to be partially or entirely determined by such threat, and the value or worth to the one purchasing, which induces such a one to pay the price involved, to be likewise determined.

Now I do not for a moment imagine that I am stating to you anything with which you are not all familiar nor am I flattering myself that I am announcing any new or important economic principle. I do, however, contend that there has been what seems to me to be a total failure to realize the connection between the well-known principles here announced and the valuation of public utility properties.

In a complex society such as we now have there can not be at all times present in any industry actual competition. Even the patron of a country store is at the moment of making his purchase subject to the possibility of some slight extortion. That price may be charged to the customer which represents the price which must be paid to the competitor plus the cost to such customer of the inconvenience, however small, of going to the competitor in the same line of business. The effect of this on prices is always shown in new countries, for example, where the supply is limited and the competitors far removed.

In the main, however, in what we know as competitive industry the tendency to add a threat price to what we call the cost price is or may be regulated within reasonable bounds by competition actual or potential.

In industry where such competition exists, the tendency always is for the one selling to furnish his commodity or his service at a price which will always have a tendency to approximate the actual cost to the one selling, including all elements, of the commodity sold or the service rendered; for merchant A knows that in order to get customers he must make the lowest price he can reasonably afford and carry on the business, for if he does not the customer will patronize merchant B who does so; and the tendency in any competitive industry is for the most efficient to fix the price. It may well be that such an efficient one may make considerably larger profit than it will be necessary for him to make and carry on his business because of his very efficiency, but this does not affect the general tendency we have noted.

Under conditions of similar costs, therefore, the tendency under competition is always toward similar prices, and this result obtains regardless of time or place of carrying on the business if actual competition exists. In short, the tendency under competition is toward the cost of doing the business, that is, toward the cost price, as we are here understanding it.

However, as the effect of competition is lessened we have uniformly seen enter the element of threat price. Often it is unrecognized, but always

it is there. I have in mind that we will be here confronted with an example of the large combinations that have been built up and have actually reduced the prices of the commodities below that which existed under competition.

In this paper it will be impossible to go into this aspect of the question in detail, but it is sufficient to say that a study of the history of these combinations will show that they have in many instances usurped a field of possible competition and that the threat of future competition has a potent effect upon their activities, and besides there is no evidence to show that the prices charged by these large combinations, even though lower than charged by the units formerly competing, are as near the cost price as was the case before the combinations were effected. In short we may not say they are not now exacting a threat price. From the standpoint of society, however, it is always desirable that prices charged shall have a reasonable relation to cost price. Mankind as a whole is interested in any plan which tends to determine rewards in relation to efforts. As a part of organic society we each admit the

PART I

THE REPRODUCTION THEORY

WHY IT HAS BEEN URGED
ITS EFFECT UPON PUBLIC WELFARE
IS IT RELATED TO FAIR VALUE
WHEN AND WHERE SHOULD IT BE USED
COURT DECISIONS THEREON

justice and desirability of this as an abstract proposition; as an individual we also each admit both its justice and its desirability as concerns the other fellow when dealing with us; but we always instinctively shrink from accepting it and applying this rule to ourselves and the concrete enterprise we have in hand. Mankind is so constituted that if left free to work upon the necessities of others it has uniformly taken good measure for its service, and a study of the activities of those in control of necessities and possessed of the power to impose a threat price, demonstrates that they do so when permitted.

But in the realm of a public utility we have a situation that is peculiar. We have here an agency that to many of its patrons always is a monopoly, and I have no hesitancy in saying, if properly controlled, it should be permitted to continue as a monopoly.

I do not propose to discuss this point further, as I assume it will be admitted that a public utility is a monopoly of the kind that should be regulated regardless of the determination that other monopolies shall be destroyed as monopolies or shall be regulated as such. All monopolies possess the power of imposing a threat price and of producing a threat value to the patron. It was the failure to recognize that the warehouses, decided to be subject to regulation in the *Munn* case, possessed this power to extort that led Justice Field to dissent. He was apparently right in saying that the decision of the Supreme Court of the United States in this celebrated case destroyed value, but he was wrong in deciding that the court had not the right to resort to such destruction. It is for the very purpose of destroying such value or of preventing it from coming into being—which is the same thing—which gives warrant for regulation of utilities and all monopolies, as far as that is concerned. As regards monopolies in naturally competitive fields, of course, it may be urged that they should merely be destroyed leaving the natural competitive forces to bring about a condition where the tendency of the seller is to impose the cost price, as we have shown is the tendency where *bona fide* competition exists. But so soon as we admit that public utilities or natural monopolies should not be destroyed as such monopolies then do we present the necessity of devising a method of preventing them from imposing a threat value and securing a threat price. In short, we say to these agencies, "You may not be permitted to take all you can get. Government will only allow you what you ought to take." And when we have said this we have placed government in the position of determining the "ought." How government should proceed to determine this is the problem that confronts the representative of government in regulating utilities. Its very statement, however, sug-

gests the consideration of equitable as against strictly legal principles, as is always the case when we seek to determine rights in terms of obligations; to determine debts in terms of merits and not power.

Some may be wondering what all this has to do with a criticism of the reproduction theory of valuation. In my opinion these principles must be understood and their relationship to the public utility realized before we are in a position to criticize any theory of valuation in this field. When we are left to determine the earning an agency ought to take, we always will have primarily before us what the agency has done; what effort it has put forth; what sacrifice it has made. And when, having marshalled all the facts that may be secured bearing upon this main question, we have fixed an earning or have determined a basis upon which an earning should be permitted, then this basis is the "fair value" of the property.

Does the reproduction theory of valuation meet these requirements? Let us go back a moment and examine its life history. Somewhere, some time, a company or an individual owned a gas plant. I take this for an example because it is one of the older utilities.—The railroad was the first to present the question of valuation, so far as I can determine, but it is one of the last apparently to present a concrete case of actually litigated valuation. The discussion of valuation with relation to railroads as applied to rate controversies has until quite recently been of the most general character.—The authorities in the community served by the gas plant in question decided to try to find out whether the owners of such plant were charging more than they should for their commodity. By both the public authority and the private owner it was immediately agreed that the consumers of gas within the community could justly be required to pay for the operating cost of the business; and it was not much harder to get an agreement that the amount of wear and tear upon the property should also be taken care of in the rates. And then it occurred to both that an interest on the value of the property, as it was called, also should be earned. In the early days there was a good deal of talk of investment and an earning upon investment. Today we hear much less of it. How to determine this value at the highest defensible amount was the problem of the owner of the gas plant. And so he looked about him and quite naturally had presented to him the method of determining value in ordinary transactions with which he was acquainted. Smith owned a horse which he was willing to sell. Jones desired to buy such a horse. A neighbor likewise had a horse that Smith imagined might be for sale at \$150. Therefore, being desirous of selling his horse, he feared if he put his price higher than \$150 Jones would buy

of the neighbor and so \$150 was agreed upon. Another man desired to buy a residence in the town. One was for sale. The owner knew that the prospective purchaser was desirous of a residence immediately. He believed the one he had for sale was the only one in town that would suit the purchaser. He knew that it would require, say, 90 days to build a desirable residence for the prospective purchaser and that such property would cost \$10,000 to build. He fixed his price at \$10,000 plus what he thought the proposed purchaser would pay rather than submit to the inconvenience of 90 days' delay, and the sale was made.

Having in mind transactions such as these, the owner of the gas plant bethought himself of a method of determining the price upon which the community should be required to give him an earning in his rates. The gas property had cost from the beginning in amounts chargeable to capital account a half million dollars. However, since the laying of the mains the streets had been paved, also the price of real estate owned by the company had increased substantially. Also, the inconvenience to the public in doing without gas for two and a half years during which time another plant could be built would be a large item. Furthermore, the public would be required to be persuaded that it needed to use gas because the fact that consumers were attached to the system for which rates were to be fixed was of value to the owner. Taking everything into consideration that could possibly be imagined as a disadvantage to the public of not receiving gas from this system, the engineers for the gas company found a price of a million dollars to be reasonable. Now in this case the fear that the prospective purchasers of the second gas plant, if it were to be sold,—and this was the theory of the price to be fixed—would go to the owner of a second and competing gas plant did not exist for there was none such, and under our theory there should be none such. And the fear of someone else being permitted to build a second plant was not taken seriously because the streets are now paved and the citizens do not desire to have everything disturbed by the putting in of a new system.

In this supposed case every element of threat price that the monopoly character of the enterprise makes possible is included, and the reproduction value is based upon what it would cost another or the governmental agency itself to build a similar plant entirely independent of the need of such duplicate plant. This is the entire basis of the reproduction theory of valuation. The owners of these properties have brought themselves to that state of mind that they feel that the price to which they are entitled is determined not by what they have sacrificed, not by what they have done, but by what they can force the prospective

buyer to pay. And their theory grows up from the analogy of prices fixed under competition when their prices can not be fixed under competition. For our main assumption is that these agencies are and of a right ought to be, upon considerations of sound economics, monopolies; but regulation exists to prevent monopolies regulated from taking that which monopolies unregulated will surely take. And if monopolies unregulated do not take more than that to which they are entitled, then regulation is needless and not at all justified.

But admitting the correctness of most of the principles we have here discussed, still the monopoly lawyers and engineers contend for a system of determining price under the reproduction theory which is entirely based upon an analogy with conditions existing under competition. And taking advantage of this analogy they urge that they should be allowed to take all that the public can be forced to give rather than build an alternative plant or induce a second utility to build such alternative plant. The impossibility of determining a just price in this way seems to me to be so evident when a monopoly is involved that I do not feel that argument is hardly necessary. Yet these utility owners continually clamor to be treated, with reference to their property, the same as other people are treated. To be sure they have a right to be treated the same as other people are treated under similar circumstances, but it is absolutely idle and vain for them to urge that the same canons of valuation, if we please to call it by that name, shall be adhered to in their case as we find in competitive industry. The very function of regulation, as I have attempted to point out, is to prevent the growing up of values in the hands of the utility owners that would result if they were permitted to determine such values by the same rules that apply in competitive industry. For the rule in competitive industry, is always to take all that can be exacted, but all that can be exacted in such industry is limited by the very competition to an amount that always tends to approximate the cost price. The natural human tendencies are there but they are restrained and limited. In the utility, however, all of the important factors that counterbalance the natural human selfishness and inclination to take all that one can get are lacking, and since we are committed to the maintenance of these agencies as monopolies such limiting factors will permanently be lacking.

There are two absolute bars to the application of the reproduction theory of valuation to utilities. The one is the impossibility of imagining the monopoly never to have existed and the conditions which such monopoly has produced still there; of thinking the effect of a certain known cause and at the same time conceiving

such cause never to have operated. The other is the impossibility of thinking monopoly and competition at the same time; the impossibility of having the condition of the property of a monopoly affected by a duplicate competing agency and still remain unchanged.

Justice Hughes discusses the first difficulty in the Minnesota Rate Case (*Simpson vs. Shepard*, 230 U. S. 352). He there says:

"Moreover it is manifest that an attempt to estimate what would be the actual cost of acquiring the right of way if the railroad were not there is to indulge in mere speculation. The railroad has long been established; to it have been linked all activities of agriculture, industry and trade. Communities have long been dependent upon its service, and their growth and development have been conditioned upon the facilities it has provided. The uses of property in the communities which it serves are to a large degree determined by it. The values of property along its line largely depend upon its existence. It is an integral part of the communal life. The assumption of its non-existence and at the same time that the values that rest upon it remain unchanged is impossible and can not be entertained. The conditions of ownership of the property and the amounts which would have to be paid in acquiring the right of way supposing the railroad to be removed are wholly beyond reach of any process of rational determination. The cost-of-reproduction method is of service in ascertaining the present value of the plant when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty."

Those urging the reproduction theory to determine the price upon which an earning shall be allowed are confronted with a very interesting dilemma. If their theory is to deal with the very property in question as a monopoly, they cannot, as Justice Hughes points out, think it away and at the same time have the results that come from its presence. On the other hand, if it is an alternative proposition which they urge and the thing which they have a right to exact is that which the public or a competitor would have to pay to put in a second plant identical with their own, they have to be confronted with the results of such duplication and they come face to face with the thing I have had in mind from the beginning, namely, the threat power of the public. Owners of public utility property would never for a moment contend for the reproduction theory if they thought the public would take them at their word. For as far as price is concerned under this theory it is utterly immaterial to the public whether they buy the existing utility property or leave it there and proceed to duplicate it. For do not the proponents of this theory seek to capitalize not only the physical property, but every known disadvantage to the public, such as paving over mains, for example, and every known or imagined advantage to themselves

such even as having consumers attached to the system, if you please? And they place their reliance on one thing alone and that is that the public if they should build a competing utility in this field would lose money because of the dividing up of the business. On this they pin their hope when they pile Ossa on Pelion in piling up the items with which the public shall be taxed. By what license do they forget that the loss of business by duplication will fall on them too? If they take the horn of the dilemma which supposes a property to remain in place and the values produced by the very monopoly itself and by reason of its being a monopoly, and assume the building by the public or a competitor of a second system identical with their own, then they have in fact not imagined the monopoly out of existence, but put it out of existence. Thus they are left to choose whether they are merely theorizing or speculating, as Justice Hughes calls it, on things that might exist if other things that do exist did not exist, and are so adopting the method that, as the learned Justice points out, has no rational basis, or are prepared to justify in good faith their threat and to accept the results thereof and be ready to meet the emergency which would arise if the public exerted its threat power too and took them at their word and built a second plant. How they would complain and how they do complain at the mere thought of such an injustice! But it is upon the theory alone that the public might do this very thing that they can justify the threat price which the reproduction theory contains. Are the utility owners any more justified in contending that the just price is determined by the answer to the question, "How much can we force them to pay rather than go elsewhere?" when there is nowhere else to go, than the public would be in asking, "How little can we force them to take rather than be ruined?" One is certainly no more devoid of equity and justice than the other. They are both threats alike. If in every case the public took up the challenge and, instead of paying a rate upon the value for which this method contends, built a competing property, the price at which the utility would sell its property would certainly be very substantially affected.

I might go into the various phases of the reproduction method, but time will not permit. The inconsistency of adopting the historical method with reference to some elements and rejecting it with reference to some others need only be mentioned. Why it is that the committee of presidents of the railroads of the United States should concern themselves with hidden costs of some elements of the properties of the railroads and forget all about hidden or other costs of lands and properties that have appreciated, is beyond my comprehension.

I really seriously wonder at the logic of those who urge that cost shall ever have anything to do with this question unless they admit it has everything to do with it, and I marvel at their regard for the simplicity of public authority when they urge that original cost shall always be used even in their reproduction theory when it will give them more than present cost to reproduce, and at the same time utterly repudiate costs of lands and similar properties when such costs are less than the market value now obtained. I do not for a moment contend that the work of the engineers in making inventories, and, if you please, in fixing unit prices is not very important. But holding, as I do, that where government is dealing with monopoly it of necessity must deprive such monopoly of the power of taking all that it can get from its patrons, I am driven to conclude that government must determine as a substitute what the agency ought to take, and in determining what the agency ought to take the safest and most just guide is what the agency has sacrificed and what service it has performed for the public. If we had this problem at the beginning and were not attacking it in the middle, we would have no difficulty in agreeing with the holder of capital upon this subject, for he would quite readily agree to take the cost of doing the business plus an earning upon the money actually invested comparable to the earning offered in other available investments. Therefore, the cost of doing the business plus a return upon the capital necessarily invested in the business, which return shall be as great as is offered in other businesses of similar hazard, is all that ought to be accorded for the future and it is all that will be accorded if the public has any business sense. And if more is asked by the private owner, then he may expect no sympathy when he finds the public his competitor and his earning power impaired. The inventories and the reproduction information are very valuable because unfortunately it is always very difficult to determine the actual investment and determine the amount upon which an earning ought to be permitted because the original evidence is so often lost. Therefore, while we resort to investigations looking to original cost, still we may likewise avail ourselves of expert engineering advice as to what the property ought to have cost, and the historical method of reproduction is extremely valuable in supplying secondary evidence when the primary evidence is lost.

In these engineering quests, however, great care should be exercised to the end that findings shall only be made by the engineers upon questions of fact. The proper amount upon which the utility should be permitted to earn in each case, being an amount which is determined as the result of the judgment of the governmental authority empowered to act, should always

be reserved for such determination. For an engineer of a public utility company or representing the state as a witness where this question is to be determined, to state that the "value" of the property involved is a definite sum,—meaning the price upon which an earning should be allowed—is for such engineer to usurp the function of the governmental tribunal before which he testifies. In determining this amount, which is the thing that all should necessarily desire to know, all of the facts, historical and otherwise, all of the engineering data, all of the accounting data, and everything that can be learned about the enterprise in question should be considered.

Some of my engineering friends have criticized me because they say that I do not suggest a definite plan of universal application for determining the "value" of the property. I contend that the method here urged is the only one that can be followed if we have in mind the nature of the problems to which we address ourselves. For any one to lay down a set of rules applicable in every case for determining this question is an impossibility and always will be so far as existing enterprises are concerned. As to the future, however, a liberal return upon the investment actually made would, in my opinion, be all that is justified. Such a return should be sufficient to induce the man with money, knowing what it will be in advance, to make the investment.

It is not by way of criticism that I call attention to the program of the utilities today. They are merely following a natural business course, shortsighted, however, in my opinion, if the public is awake. Today the Interstate Commerce Commission is engaged under an act of Congress in collecting data concerning the railroads of the United States. The railroads quite naturally are attempting to determine the lines upon which the inquiry shall be prosecuted, and the results that shall be obtained. I have confidence in those directing this valuation, and I have no fear that they will not do all in their power to secure the information fairly and make their determinations intelligently and fearlessly. But the fact that tremendous sums are being expended by the representatives of the railroads in, as I have already suggested, hunting for hidden quantities and the like and in seeking in every way in their power to affect the determination of this question in a way favorable to themselves, should put the public on guard lest their side be not properly presented. I have no hesitancy in saying that it is my belief that if the Interstate Commerce Commission should adopt the reproduction theory of valuation as the proper price upon which the railroads should be permitted an earning,—which would ultimately determine the price which the public would be required to pay for these roads

if public ownership should prevail,—a result will be produced which will make it necessary for the public to resort to its threat power and compete with these agencies until they shall be of a reasonable mind.

As I have already suggested, it is just as logical for the public to say to the railroads and the other public utilities, "How low can we force you to fix your price rather than for us to destroy or impair your property by competition," as it is for these agencies to say, "How high can we force you to pay rather than build your own facilities." Much scoffing is indulged in by some of our railroad friends when we speak of the public ownership of these lines and the danger to them of public competition. The same kind of scoffing was indulged not so many years ago by other utilities on the same subject, but in my experience on the Railroad Commission of California I have seen at least two instances where the public has competed out of existence and reduced to junk water systems privately owned. Do not for a moment understand me as advocating confiscation, legal though it may be. I am merely trying to analyze the conditions, and I would utter this note of warning. Liberal treatment ought always to be given by the public to those agencies conducting themselves in such a manner as to demonstrate their intention to be fair, but the suppression of facts, the distortion of evidence, the exaggeration of values and the seeking after new and ridiculous intangibles can have but the result of making the public forgetful of the real equities and the just claims of these enterprises. Their engineers have already consciously and outrageously exaggerated their values, and none know it better than they. They have brought about a condition where the engineers who desire to present the real conditions are almost afraid to do so, and their fear is more or less justified. I, myself, have discussed this question with many of them, and they say it is the custom of commissions always to cut valuations submitted; and, therefore, if they submit the figures upon which they expect to rely, these will be cut, too. On the other hand, utility commissioners, conscious of the adroitness, the ability and the great shrewdness of these intensely intelligent experts employed at high salaries by the big utilities, and feeling that they have submitted the highest that they could justify under any circumstances to the most credulous, and too often recognizing their own inability and lack of facility to learn the true facts, are inclined to cut all valuations submitted. Thus practically an impasse has been created due very largely to the foolishness and shortsightedness of those who do not respect the intelligence of public authority, and likewise due to the fact that sometimes public authority is not worthy of respect. This condition shows those representing the public and those representing

the utilities who desire only an honest determination of these great questions, the work that must be done. We must first get into the minds of those in control of public utilities the understanding that the public will not be exploited and we should induce in those among them who are honest (and I am glad to say they have, by my experience, been shown to be largely in the majority) the spirit of co-operation and fair play which leads them to present their facts just as they are and not distort them; and, on the other hand, we should seek to have as representatives of the public only those who are fair-minded enough to desire to do right and intelligent enough to know how to do it.

I have several times here indicated my belief in a somewhat different rule for the future than the past. I am free to confess that the proper treatment of the existing utility has given me much bother. This is due to innocent third party contention. Now I know this is overworked and I know too that the concern for the widow and orphan investor is often a feigned concern, but we must all admit that the public is in part at fault for permitting things to be lawfully done in the past that were, except for such legal sanction, at least questionable. I have contended for equitable considerations. For the future we must hold out that inducement, so long as we have private ownership of utilities, which the investor is willing to accept. Our alternative necessarily must be public ownership. Manifestly public authority can not in conscience withdraw or lessen the inducement after the investment is made. Just so as to the past we should accord that treatment to the investor which he had a right lawfully to expect and should if possible of determination accord to him that amount which is the minimum which would have induced the investment could it have been known in advance.

I recognize the very general character of the rule I suggest but of necessity it must be general. For the future always the cost of doing the business should be the aim. Of course in this will be included every legitimate element of cost. Always such cost must, as I said here a year ago, stand the comparison with costs under publicly owned utilities. For the past we should allow such a basis for earning as equitable considerations warrant, never enhanced because the agency is a monopoly and determined in view of all the facts that can be ascertained. In marshalling these facts the work of the engineer in determining quantities and unit costs as bearing upon what the property should have cost under ascertained conditions and the work of the accountant in analyzing actually located expenditures are but complements to each other. Each is extremely important but neither alone under the con-

ditions under which utilities have been conducted in the past, sufficient finally to solve our problem.

I conclude that as far as the past is concerned it is impossible to know in any case that we have done absolute justice in valuing utility property, but I contend we may be assured within reasonable limits in any

given case provided there is co-operation by all concerned in attempting to reach the just and fair result. But I am quite sure that the cost of reproduction method as now being used, or rather abused, is getting us further from the solution of our problem rather than nearer to it.

REPRODUCTION VALUE VS. FAIR VALUE

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IT HAS been said that though the Constitution of the United States is great in what it expressly sets forth, yet it is infinitely greater in what it leaves to interpretation. In like manner the decisions of the Supreme Court of the United States upon the subject of the fair value of the property of public utilities, while great in what they expressly set forth, are infinitely greater in what they leave to the sound judgment and discretion of courts and public utility commissions.

In theory, fair value to the public and fair value to the utility are one and the same. In actual practice, however, what the utility considers fair to itself, the public considers extortion, and what the public considers fair to itself, the utility considers confiscation. Under these conditions it is the special province and duty of public service commissions to reach an equitable mean between these two points of view after first having carefully weighed the contentions of either side. How, therefore, as a practical matter, can a proper balance be struck between the contending parties, and, as a practical matter, how shall fair value be weighed and with what scales?

The Supreme Court has answered these questions as completely and conclusively as it has ever answered any questions coming before it for final determination. It has frequently reaffirmed that answer, and the answer is this: The scales to be used by courts and public service commissions in reaching a correct balance between the contentions of the public on the one hand and the contentions of the public utility on the other hand, must be of such a character as to provide a place for the original cost of construction, for the amount expended in permanent improvements, for the amount and market value of the bonds and stock, for the present as compared with the original cost of construction, for the probable earning capacity of the property under particular rates prescribed by statute, for the sum required to meet operating expenses, and for all such other matters as may be necessary to be considered in

arriving at an equitable decision. So much for the scales upon which the balance is to be struck. As to the method to be employed in using these scales, this is left, as it should be left, to the sound judgment and discretion of each commission, so that such weight may be given to each of the above enumerated elements as may be fair, just and right in each particular case.

WHAT IS REPRODUCTION VALUE?

The subject of this paper concerns itself with one of these methods of valuation which under the rulings of the Supreme Court must be taken into consideration. This method is known as the reproduction cost method, and the final figures resulting from the use of this method may be termed the reproduction value of the property. In short, it is an estimate of the number of dollars which it would be necessary to expend at the present time and at the present prices of labor and materials to produce, in an assumed period of years, the present identical property, together with its present identical business. From many points of view, it would almost seem surplusage to discuss whether an estimate of the cost at the present time to produce an identical plant with its identical business in a hypothetical period can ever represent, except by mere chance, the fair value of the property of a public utility. But continued efforts on the part of certain utilities to obtain a high valuation for their properties through the use of the reproduction cost method may unconsciously affect the action of public service commissions unless representatives interested in the rights of the public are equally conscientious in continuing not only to point out, but also to reiterate, the unfairness of this method.

TWO KINDS OF VALUE

For the purpose of the present discussion, let us consider first whether reproduction value is value in its commonly accepted sense. Now value may mean one of several things. In the ordinary acceptance of

the word value signifies exchange value. As a business proposition, the value of a horse, or of a house, or of a pound of sugar, is the amount of money that it can be sold for. Again, value may be used to mean fair value for rate making purposes, or, as it may be called, rate value. While there are several other types of value, it is sufficient for the purposes of this paper to comment merely on the two kinds of value above mentioned.

Before discussing reproduction value in connection with fair value, it may not be out of place to point out that the reproduction cost method does not arrive at the figures which express in dollars the value with which all of us are most familiar, *viz.*: exchange value. It is worth while to do this for the reason that there may be a subconscious feeling that while the reproduction cost method may not produce results which can be called fair value, yet that it does produce results, which, were it not for the equities of the public, would represent, irrespective of monopoly, proper and tangible values in the ordinary business world. Quite the opposite is the case.

REPRODUCTION VALUE DOES NOT REPRESENT EXCHANGE VALUE

Adverting, then, for a moment to exchange value, which, after all is said and done expresses completely the ordinary meaning of the word "value," we can see almost at a glance that the reproduction cost method does not arrive at a figure which represents this kind of value.

Take, for illustration, an automobile purchased five years ago, and still rendering reliable service. As a practical matter, the original cost of the automobile certainly has nothing to do with its present value, but neither has the reproduction cost. An estimate of the cost of reproducing the identical automobile with all its identical parts would certainly not represent its value at the present time. This is so for the reason that its value would depend not on the reproduction cost of the identical machine, but the cost today of a machine perhaps of an entirely different type, which would render equally efficient service. This exact point in question was recognized in a recent valuation case in Maryland where the reproduction cost of certain obsolete telephone instruments still in use was displaced by an estimate of the cost of replacing these obsolete telephone instruments with modern telephone instruments. But no attempt was made in this case, or so far as I can learn, no serious attempt has ever been made in any other important case to apply this measure to the entire plant, and thus to estimate the cost of putting in, not a duplicate plant, but a plant located along the most economic lines, taking into considera-

tion every present condition. I allude to this failure not by way of suggesting that true reproduction cost should consist of an estimate of the cost of the most efficient and economic plant which could be constructed under prevailing conditions, but rather to point out that the present method of arriving at reproduction cost results in a figure which is not value in the ordinary sense of the word.

In a public utility plant which possesses all types and classes of property bought or constructed at sundry times during the life of the utility, the reproduction cost method, as commonly applied, must and does regularly produce results in favor of the company such as no other private company or business can possibly obtain. The private company must meet the competition not of an identical plant in an identical location, but the competition of the most efficient plant at the most efficient location. The public utility, however, in the valuation of its property along reproduction lines, gets credit for each portion of its property upon the basis that each portion is the most efficient which could be devised at the present time. This is in itself an absurd proposition for it carries with it as a necessary corollary that human hindsight is no whit better than human foresight. Public utility attorneys try to impress courts and commissions with the fact that the reproduction cost of their properties is the cost which the public would have to expend today to obtain the existing service. This contention is clearly fallacious, because it leaves out of consideration the fact that the cost today of constructing a public utility property insuring equal service and efficiency is certain to be lower than the cost of reproducing the identical plant now in existence.

Another reason why the reproduction value of the physical plant does not represent exchange value lies in the fact that this reproduction estimate will be exactly the same when applied to a plant which is rapidly losing money, as it would be to a successful plant which is earning large dividends. In each case the cost of reproducing the plant would be the same, but its value as a plant would be absolutely and totally different. Moreover, this difference under the reproduction method would be necessarily disregarded as if it was non-existent. This fact standing alone would be sufficient to prohibit reproduction value from being considered value in the ordinary sense of the word.

REPRODUCTION VALUE DOES NOT REPRESENT FAIR VALUE

Having pointed out as briefly as possible two fundamental reasons why reproduction cost as now employed, cannot, except by chance, produce a result which can be tagged exchange value, let us consider for a moment

some of the criticisms of the reproduction method which are applicable when fair, or rate value is the object of the inquiry.

As far as the cost of reproduction of the identical plant is concerned, this cost is not in some respects so distant from fair value as it is from exchange value. There is a distinct element of fairness in allowing a utility credit for its entire existing plant where this plant has been constructed from time to time in a reasonably efficient manner. If, however, the utility is to be allowed full value for every item of plant in disregard of the fact that a more economic and efficient one could be constructed at the present time, then there are also equities in favor of the public, such as actual costs of rights of way, land, etc., which should be taken into consideration. In valuation cases, however, the utility is apt to insist not only upon the reproduction cost of the identical plant, but also upon the strict reproduction cost as applied both to land and to rights of way. If equities in favor of a utility are to be considered, equities in favor of the public must likewise be considered.

THE RISING COST OF LABOR

Again under the reproduction method, as applied, the calculations are based upon the costs of labor and materials as they exist today. It is well known that these costs have been steadily rising for years, and that therefore the values obtained by this method are almost certain to be higher than the actual costs incurred by the public utility. This criticism is really one which, while it effects the public adversely at the present time, might easily be one that some time or other might return to plague the inventor. It would not seem fair to the public utility, if costs of labor and supplies had gone down rapidly in the past ten years, to state arbitrarily that the value of its property devoted to public use had decreased in equal amount. It likewise does not seem fair to the public to raise the value of the public utility's property for the reason that costs have risen. To carry this plan to its logical conclusion, it would be necessary to change the value of the property of public utility companies each time that there was a fluctuation in the prices of labor and materials, and such a change would, of course, lead to unstable and undesirable conditions.

RIGHTS OF WAY AND PAVEMENT

In regard to rights of way, pavement over mains, etc., the regular reproduction method clearly results in figures which have no practical relation to fair value at all. This was demonstrated in the Minnesota Rate Case where the claim for reproduction values for rights of way was held to be based upon mere conjecture

impossible of rational ascertainment; and in the recent Des Moines Gas Case where reproduction values for pavement over mains were disallowed. That utility companies should make vigorous and persevering efforts to base claims for value upon the fact that the taxpayers in cities and towns have expended large sums of money to acquire modern pavements, which would have to be in part torn up and relaid were their properties reconstructed under the reproduction theory, a condition which has not occurred and which cannot occur, shows to what lengths efforts are made to conform to an exorbitant theory of value.

INTANGIBLES

Thus far my remarks have been confined to the important difference existing between reproduction value, exchange value and fair value as applied to the actual physical plant. When, however, we come to the subject of intangibles, which is always the most difficult problem met with in the valuation of public utilities, we find that any estimate of the cost of reproducing the present business at the present time must be from the very nature of the case little more than a mere guess. This is due to the fact that there are so many assumptions involved that the incorrectness of any of them might not only entirely alter the result obtained, but even make any result impossible of attainment. When the chief engineer of the Bell Telephone Company of Pennsylvania was asked, referring to the reproduction method used in a valuation case involving that company's entire property in the State of Pennsylvania, "Now, as a matter of fact no one would construct under the conditions you have assumed" his answer was, "Oh, no." If no one would construct a plant under the conditions assumed by the reproduction method, it is doubly true that no one would ever attach the business of the company under the numerous assumptions necessary in working out the result obtained under the reproduction method. While such a method is ingenious as applied to so-called organization and development expense, it is fantastic in the extreme.

REPRODUCING A TELEPHONE BUSINESS IN 1914

Dr. Edward W. Bemis in testifying in the case referred to gave a vivid picture of theoretical reproduction in the year 1914 of the Bell Telephone Company's present organization:—

"Q. In any estimate of cost to reproduce a property, do you recognize an element of organization and development?"

"A. On the reproduction theory you do have that."

"Q. How can you most easily arrive at that?"

"A. By estimating generally that a plant is entirely blotted out; that the people have no telephone utility, for

example, in the City of Philadelphia, and some people casually meet at a club around the street, and they wonder whether the people of Philadelphia really would like a telephone system. They are not certain at all about it. They think perhaps they would. So the first thing they do, they get some canvassers to go to work and test public sentiment, feel it out a little, and perhaps put a few articles in the papers, and they find some response, and they conclude perhaps the people in Philadelphia in 1914 might like a telephone system. So they organize a company and see how they can raise capital. They get in touch with lawyers very early in the game, of course, and prepare for the legal papers necessary, and then they apply to the proper authorities for the permit and franchise, and incorporation, of course. Then they complete the raising of necessary funds, engage a proper office building, and proceed to secure engineers to provide plans and specifications, and they go out, with considerable effort and trouble, to try and find out where to locate the cables and where to locate the switchboards. They do not know anything about it, but they always, by a curious coincidence, finally succeed in locating just where the present stations are and switchboards, and they finally decide on exactly the present cables. They knew nothing about it to start with. They put their engineers to work to determine just what the traffic will require in each street, and they finally end in deciding it requires just what is there now, and they ultimately let contracts for such part of the work as they do not decide to do by direct labor and proceed with the supervision of those contracts, the construction of the property and canvassing for business, and putting the plant into operation as fast as possible.

"Q. All that is very real?

"A. It is absolutely fanciful and fantastic as to any condition that will ever confront a company that is already in business. It never will have to do that. It never has done it to anything like the extent proposed here. It is a species of dreamland investigation."

PRESENT COST OF ATTACHING BUSINESS UNRELIABLE

The attempt is often made to give such dreamland investigation apparent stability by using actual costs incurred by the utility along the same lines in recent years. Such a foundation is wholly unreliable for the costs necessary in acquiring new business for a plant long since in operation can in no sense be evidence of the cost which would be incurred in acquiring new business for a plant with no patrons. No engineering or other estimate can possibly be made which could indicate with any degree of exactness the amount of money which would be necessary to expend to create the business of a long established utility company upon the theory that in the year 1915 this utility was not in existence. For instance, in the case of a gas and electric company, to imagine that a large modern city with its street car service, its elevators, its factories, its myriads of lights, should suddenly be placed in a

position in which this entire plant and connections of every kind and description were blotted out of existence is to imagine the inconceivable.

The allowance to a company of a claim of this kind as evolved by the reproduction method would result in forcing the public to pay out yearly large sums of money to cover imaginary expenses which never have been, and never will be incurred. However much we may admire, from a theoretical standpoint, the ingenuity of engineers in working out this development cost, it must always be borne uppermost in mind that the end sought is to impose yearly charges of real money based on imaginary suppositions. As was said in the brief of the City of Milwaukee filed in the case of *City of Milwaukee, Intervenor vs. Wisconsin Telephone Company*, now pending before the Railroad Commission of Wisconsin:—

"How much solicitation on the part of the hypothetical telephone company would be necessary to induce the First National Bank of the City of Milwaukee that a telephone was necessary for them, and that they ought to install a telephone? The mere statement of this proposition shows the utter ridiculousness of this item. The chances are if there were no telephones in the City of Milwaukee, and a new plant were to be put in, the City of Milwaukee would be obliged to hire a police force to keep the crowd away from the telephone office, as there would be so many people asking for telephone service" (page 45).

Whatever sums of money have been actually spent by the public utility in the past for the purpose of obtaining the present business have, in most cases been long since paid for by the utility out of rates collected from the public. The public having paid these costs once should not be called upon to pay them a second time. While it would be strange, indeed, if a public service commission should require that the public should again repay the costs of attaching business which have actually been incurred, yet it certainly would be the height of unfairness to permit a utility to exact from the public a continuing yearly payment to cover a hypothetical sum of money which it is estimated that a hypothetical company would have to expend to attach its present business were that utility blotted out of existence.

GOING CONCERN VALUE IN A RATE CASE

Fortunately for the purposes of a rate case, this question of hypothetical intangibles in so far as it is bound up in so-called going concern value has been resolved in favor of the public by the Supreme Court of the United States in the very recent case of the *Des Moines Gas Company vs. City of Des Moines*, decided June 14, 1915. Up to this time there was a reasonable doubt as to whether a separate and distinct allowance

for going value should be made. In 1912, Dr. Robert H. Whitten in the first volume of his "Valuation of Public Service Corporations" took the view that the preponderance of precedent was undoubtedly against the inclusion of going concern value in a valuation for rate purposes. In speaking of the case of the *Cedar Rapids Gas Light Company vs. City of Cedar Rapids*, 223 U. S. 665, Dr. Whitten said:—

"Taken in its context, this seems to mean that if a plant is in successful operation it is entitled to a valuation based on the cost or the cost of reproduction less existing depreciation of the complete plant and not upon the mere salvage value of its separate units. If the plant were to be dismantled the separate units would have a comparatively small value, but so long as the plant is in successful operation and entitled to continue such operation the plant must be valued as a going concern. This seems to be a complete denial of the claims of the advocates of a separate and distinct allowance for going value or going concern value.

"This is the view taken by Judge Robert Sloan, special master in chancery, in his report, filed April 4, 1912, in the *Des Moines Gas Case*. (*Des Moines Gas Company vs. City of Des Moines*, United States Circuit Court, Southern District of Iowa, Central Division, Report of Robert R. Sloan, Special Master in Chancery, April 4, 1912.) Judge Sloan had been inclined to allow the claim of the company to \$300,000 as going value. But when the decision of the Supreme Court of the United States in the *Cedar Rapids* case was handed down he concluded to exclude this item. Referring to the *Cedar Rapids* decision he says:—

"In my judgment, after considering the able and thorough arguments of counsel, it is decisive of the question, and holds, that going value should not be considered in determining the basis upon which the complainant is entitled to have its return reckoned, and I feel it is my duty to so state."

The correctness of this viewpoint was emphatically sustained by the decision of the Supreme Court in the *Des Moines* case above alluded to. In this case the contention of the respective parties in relation to going value was clear-cut in the extreme. The city of *Des Moines* contended that when the overhead percentages had been added to the base cost of the physical property (the overheads in this case being 15 per cent) that the total figure thus arrived at took into consideration the fact that the plant was in successful operation. It was the contention of the *Des Moines Gas Company* that with the overheads added, the resultant figure merely represented the bare bones of the property, and that the \$300,000 which the master had actually found to be the going value of the property must be allowed in addition. The Supreme Court, after stating that none of this \$300,000 actually found to be the going concern value existed in the valuation appealed from, held that all of this going concern value was properly omitted, and it further stated:—

"When, as here, a long established and successful plant of this character is valued for rate making purposes, and the value of the property fixed as the master certifies upon the basis of a plant in successful operation, and overhead charges have been allowed for the items and in the sums already stated, it cannot be said, in view of the facts in this case, that the element of going value has not been given the consideration it deserves, and the appellant's contention in this behalf is not sustained."

On account of the fact that this case was most ably argued before the Supreme Court, and that the several briefs filed by the Gas Company quoted at length the numerous cases throughout the country which are authorities for the contention that a separate and distinct sum must be allowed for going value, the importance of the case will be appreciated. Indeed, a reading of the various briefs filed in the case shows conclusively that the Supreme Court waived aside all the decisions which treat going value as a separate element, and based its determination upon the sound common sense proposition that an estimate of the physical property of a public utility, including reasonable overheads, arrived at by the reproduction method results, *per se*, in giving to the plant all the fair and proper value to which it is entitled.

REPRODUCTION METHOD MERELY AN AID

Having pointed out some of the criticisms which inevitably will be apparent to anyone who tempers his admiration of the ingenious theory of reproduction cost with rational common sense, the question naturally arises, has reproduction value any relation to fair value, and if so, what? The Supreme Court of the United States completely and authoritatively answered that question in the *Minnesota Rate Case* when it said "The cost-of-reproduction method is of service in ascertaining the present value of the plant, when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty. But it does not justify the acceptance of results which depend upon mere conjecture." Such a statement as this expresses what I believe to be the true value of the reproduction cost method as applied to the valuation of public utilities. In other words, the reproduction method is of service when reasonably applied in the valuation of most kinds of physical property, but it is of no real service in estimating the value of other classes of property such as rights of way, developed business, etc., for the values arrived at by its use are based upon mere conjecture. As was said by Mr. Justice Hughes in the *Minnesota Rate Case* "The assumption of its (a railroad's) non-existence, and at the same time that the values that rest upon

it remained unchanged, is impossible and cannot be entertained."

METHOD MUST BE REASONABLY APPLIED

The reproduction method itself does not result in obtaining a figure which represents fair value, but, as the Supreme Court says, it is of service in ascertaining the present value, when it is reasonably applied. How reasonably it may be applied in any given case must necessarily depend on the ability, carefulness and fairness of the engineers who are employed to make the estimates. This in itself is a highly important factor which always should be kept in mind. Reproduction cost, at best, is only an estimate. Anyone who has had experience in obtaining bids on construction even as small as a dwelling house will be aware of the large differences in the estimates of various firms seeking to obtain the contract. It is, therefore, equally and necessarily true that the estimates of different engineers, even when candidly made, must be wide apart on an estimate so complex as that of reproducing the entire property of a public utility. In actual practice, the public utility would award a contract to build to the reputable contractor whose estimate was the lowest. In a valuation case, however, the public utility will be found strenuously maintaining the accuracy of the highest estimate of reproduction cost which reputable engineers place upon the property. I do not say this in criticism of the position of the companies which I think are, under present conditions, in duty bound to contend for liberal estimates of value, but merely to point out the fact that engineering estimates based on the cost of reproduction are generally open to very wide modifications even in as far as the physical property is concerned. These modifications are seldom brought to light, due to the fact that as the estimate does not result in any actual work, no independent contractors will consider submitting bids upon a hypothetical plant to be constructed in a hypothetical period of time.

FAIR VALUE NOT A MATTER OF ARITHMETIC

But having pointed out some of the numerous shortcomings of the reproduction method, and having endeavored to show that it does not furnish any criterion either of exchange value, or of fair value, someone will undoubtedly ask the question, what can be offered in its place? That is a question which is regularly hurled at the heads of those who criticize the pet child of public utility engineers. The question, however, while proper, is perfectly harmless, because those who point out the shortcomings of reproduction cost have behind them the firm and often announced judgment of the Supreme Court of the United States. However much we may all regret that there is no easy road for valuing the property of a public utility company, however much we may regret that there is no simple arithmetical theory by which it can be evolved, yet one thing is certain and that is that to obtain the fair value of the property of a public utility company at the present time of the world's history it is necessary to take every relevant fact into consideration, and reproduction value is only one and by no means the most important of the many relevant facts.

As was so well said by Mr. Justice Hughes, again quoting from *Minnesota Rate Case*, "The ascertainment of that value is not controlled by artificial rules, it is not a matter of formulas, but there must be a reasonable judgment having its base in a proper consideration of all relevant facts." The thing that must be determined by the commission or court is not the original cost of the construction of the property, not this plus the amount of permanent additions, not the amount of market value of the stock and bonds, if any, not what would be the present cost of the construction of the property, not its earning capacity under the present rates, not the various other values proper for consideration, but something to be evolved and worked out in the minds of the commission or court from all of these elements, which something they are willing to say and will say is the fair value of the property in use for the convenience of the public.

RELATION OF REPRODUCTION COST TO FAIR VALUE

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The trouble with most criticisms and discussion of reproduction cost is that they adopt subjects of consideration such as the titles of the papers we have just listened to, viz.:—"Reproduction Value vs. Fair Value," and "*Criticism of the Reproduction Theory of Valuation*." Such subjects necessarily lead to confusion, and obscure the important distinction

between the estimation of reproduction cost and the relation of reproduction cost to fair value, which is itself worthy of thorough and thoughtful discussion.

If this distinction could be maintained the discussion might be conducted on a much more intelligent basis. Criticism which is now destructive might then be made

constructive. Fluctuations in prices of labor and material would not be advanced as an argument against computing reproduction cost, but helpful suggestions might result from a consideration of the most reasonable method of allowing for these fluctuations in such estimates. It would then be readily agreed by all that the cost of removing and replacing pavement is a necessary part of the cost of reproducing an existing property and must be included in any intelligent estimate of reproduction cost. Objection to inclusion in fair value might then be confined where it belongs, to a consideration of the relation of cost of reproduction to the amount allowed for rate making purposes.

From this point of view cost of reproduction,—i.e., replacement of existing property,—is a logical determination, the estimation of which is generally agreed upon as important as an element for consideration in all valuation and rate making studies. In order that they shall be helpful such estimates must be made by experienced engineers and appraisers, honest in thought as well as in the purpose of establishing a fair estimate of what it would cost in outlay of money to reproduce the plant, business and whole property of the utility in question at the time of the investigation.

Notwithstanding the suggestion of the second author, the speaker fails to see the bearing on the subject, provided the distinction above referred to is maintained, of the estimated cost of reproduction of an entirely different plant designed to give equal service and based upon relatively unerring hindsight rather than imperfect human foresight. If cost of reproduction is to mean anything at all, it must mean the estimated cost of reconstructing the identical property, under the conditions as they exist at the time of the investigation, and with unit prices of material and labor as of about the same time; making of course proper allowance, by some reasonable method of weighted averages, for the fluctuations incident to market changes, so that a normal rather than extremes will be used. If pipes are laid under paving, then by all means include the cost of taking up and replacing the same, and if land has increased or decreased in value, then estimate what it would cost to acquire it at the present time; leaving for later consideration the bearing of this cost of reproduction, estimated in this way, upon the final determination of the fair amount for whatever purpose is in view.

NON-PHYSICAL ELEMENTS

In the same way the non-physical or so-called "intangible" costs should be estimated, as of the present time, on the basis of mature judgment founded on the actual experience of companies during their days of organization, construction and development. Such calculations are, of course, no more than estimates, just as are the computations of cost of reproduction of the physical items, but they are not "mere guesses" any more than any estimate, founded on well informed judgment, is a guess.

The speaker recognizes the difficulty in estimating the cost of reproducing the business of a successful going concern, and he agrees as to the uniqueness of the conception of a

utility suddenly wiped out while assuming all other conditions to remain exactly the same as they are in the presence of the utility. Nevertheless his common sense, based upon practical experience, tells him that it would cost more to reproduce a successful going business than it would cost to reproduce its "bare-bones," the physical units—and he is convinced that an estimate of the probable deficit below a fair return, which would be experienced by a plant if its physical elements were reproduced at the present time and if it were operated until it acquired the business of an existing successful plant, is the best method of measuring this element of reproduction cost and entirely consistent with the logical replacement conception. It is evident from his criticism of this conception as "fantastic in the extreme" that Mr. French has no understanding of this important and inevitable feature of the early history of all public utilities. Criticism on this point would be more helpful if it would suggest improvement in the method of making the estimate, rather than to confuse the issue by mixing it up with a consideration of the entirely different questions coming under the head of the relation of cost of reproduction to fair value.

This failure to maintain important distinctions is again emphasized by Mr. French's argument that "whatever sums of money have been actually spent in the past for the purpose of obtaining the present business, have in most cases been long since paid for by the utility out of rates collected from the public." Such sums of money belong among the elements of the historical cost, and this statement, even if correct has nothing to do with a discussion of the cost of reproducing now the business of a utility.

Nor is the citation of the Des Moines Gas case particularly convincing proof that the Supreme Court does not recognize "going cost" as an element in estimating the reproduction cost of the property and business of a utility. In the first place, the Supreme Court, in common with others who have discussed the subject, has not always clearly distinguished between the estimation of cost of reproduction and the determination of fair-value. And secondly, the very quotation which Mr. French uses states clearly that the Supreme Court was not deciding the issue in question, but only that,

"It cannot be said, in view of the facts in this case, that the element of going value has not been given the consideration it deserves."

Mr. French's interpretation is an unwarranted extension of the clear meaning of the decision, and, in fact, in this same decision, the Supreme Court said:

"That there is an element of value in an assembled and established plant, doing business and earning money, over one not thus advanced, is self-evident. This element of value is a property right, and should be considered in determining the value of the property, upon which the owner has a right to make a fair return, when the same is privately owned, although dedicated to public use. Each case must be controlled by its own circumstances, and the actual question here is: In view of the facts found, and the method of valuation used by him, did the master *sufficiently* include this element in determining the value of the property of this company for rate making purposes?"

ORIGIN OF USE OF REPRODUCTION

Estimates of cost of reproduction are, of course, useful only when they are carefully and honestly made. The speaker joins in the condemnation of the engineer who, in order to serve the interest of his client, places his estimate of cost of reproduction above the sum for which he honestly believes the whole property could be fairly reproduced. But he believes that such instances are much more rare than is often intimated and he objects strongly to the suggestion that reproduction cost and the current methods of estimating it were invented by engineers for the purpose of maintaining high rates of utility companies. This is certainly quite as far from the truth as would be the statement that original cost was invented by municipal officials for the purpose of depriving utilities of a portion of their property.

The origin of the estimation of cost of reproduction is perhaps clouded in obscurity, but the frequency of situations in which there is a total lack of evidence of any other kind to be used as a basis of estimating the fair amount,—*i.e.*, of books and other records—suggests the much more probable explanation that the use of this line of information was born of necessity, rather than the fanciful one that it was originally invented for the purpose of imposing inequitable burdens upon a long-suffering public. In spite of his imaginative picture of the mental processes of the old bandit who first applied the process to the gas business, Mr. Eshleman would seem to share this view to a certain extent when he says:—

“The inventories and the reproduction information are very valuable because unfortunately it is always very difficult to determine the actual investment and determine the amount on which an earning ought to be permitted because the original evidence is so often lost.”

Just as it is absurd to accuse the engineer of originating cost of reproduction from improper motives, it is equally improper to blame him for the general agreement upon its usefulness as a line of evidence in investigations of this sort. The Supreme Court decisions, which the critics of the method have quoted, together with the wording of our Pennsylvania Public Service Law and of similar acts, indicate clearly that the blame for this, if any, is with the courts and legislatures and not with the engineer, who has been called upon by the courts to apply his special training and experience to the presentation of this useful kind of information. In estimating the cost of reproduction the engineer is concerned only in expressing his opinion as to the money that will be required to reproduce the property in question and if he is honest he will follow this through to the logical end without allowing his opinion to be affected by whatever views he may hold upon the entirely different question of the relation of such cost of reproduction to fair value.

Nevertheless, the speaker does not agree with Mr. Eshleman that the engineer should be restrained from forming and expressing an opinion as to the proper amount upon which the utility should be permitted to earn. He agrees as to the importance of distinguishing clearly between the engineer's expression of such opinion, and his testimony as to the estimate of cost of reproduction. But that such expression of opinion is not an unwarranted usurpation of

the function of the governmental tribunal and is not so considered by such bodies is proven to the speaker by numerous experiences in Pennsylvania, where the courts and the Commission have expressed their willingness to hear such testimony, and to give it such deserved weight as their opinions of the breadth of view and soundness of judgment of the witness justified.

RELATION OF REPRODUCTION COST TO FAIR VALUE

This latter phase of the question, to which we may now direct our attention, may be considered from two different points of view, *viz.*, that of law and that of equity. From the point of view of existing law, the speaker believes that a perusal of court decisions can lead to no other conclusion than that the cost of reproduction is a most important item of evidence in determining fair value and that upon it, with occasional modifications most of the decisions have actually been based. The consideration given to other evidences of value such as are referred to by Mr. French at the close of his paper (original cost, market value of stocks and bonds, earning capacity under present rates, etc.), has been theoretical rather than actual.

Dozens of cases might readily be cited to support this view, but as the Des Moines Gas Case¹ has been mentioned as the most recent expression by the Supreme Court, this one example will suffice. Here the court quotes the master, with tacit approval as arriving at the “present value of physical property” by estimating “what it would cost to produce it at the present time new,” and then adding “overheads” and deducting depreciation. Again, apparently with the full approval of the court, the master is quoted, in his discussion of “overheads,” as follows:—

“It is not a question of what was actually expended therefor in the plant in question, but what would it cost to reproduce a similar plant at the present time. It is through this method we reach the present value of this plant new, and then when it is properly depreciated, according to the condition, life and age of its various parts, we reach the present value of the plant in its present condition. It is not a perfect method, but it is the best method therefor, and results as nearly as possible in giving the present value of the plant. No other method known has proved so satisfactory.”

Such a conference as this, however, need not spend so much time in discussing the question from the point of view of law as from that of equity. It may well interest itself, not so much in what the law is, as in what the law ought to be. The speaker has the greatest respect for the courts and their decisions, but believes we should express our differences with them when we believe they have reached wrong results by incorrect methods of reasoning. And as he is convinced that the truth must in the end prevail, he has every confidence that if the law as it now stands is wrong, every court in the land from the lowest up to the Supreme Court of the United States, will eventually reverse itself on this question of the relation of the cost of reproduction to fair value for rate making purposes.

¹ *Des Moines Gas Company vs. City of Des Moines*, 238 U. S. 113.

Approaching the question from the point of view of equity, the speaker finds himself to a considerable extent in agreement with the position so well expressed by the paper of the Honorable John M. Eshleman. He agrees that it is unfortunate that the word "value" should have crept into these discussions and that a far different result would have been reached if the courts had set out to determine the fair amount upon which a reasonable return should be paid rather than the "fair value," with all the confusion attaching to the name. He believes that there is a sense of compensation, of reciprocity, in the word "return" and that, in equity, when we speak of a fair return, we mean not a reasonable income upon some kind of valuation, but a giving back to the investor a complete and fair equivalent for what he has devoted to the public service. Consequently, he believes that the amount upon which a utility is entitled to earn a fair return is the actual legitimate total investment in the property as determined by the total expenditures, not only in dollars and cents, but in time, energy, ingenuity and effort.

HISTORICAL OR ORIGINAL COST

In speaking of total, actual or historical cost, the speaker desires to emphasize the distinction between this and book cost, or any incomplete estimate of historical cost. He believes that actual cost was well defined by the Wisconsin Railroad Commission when, in *Payne et al vs. Wisconsin Telephone Company* 4 W. R. C. R. 51, it said,

"Every effort honestly put forth, every dollar properly expended, every obligation legitimately incurred in the establishment of an efficient public utility business must be taken into consideration in the making of rates for such business."

The distinction between actual cost and book cost will be generally recognized by the critics of the reproduction method, when it requires the elimination of excessive increases of plant valuation on the books, because of fictitious transactions, stock manipulation and other operations characteristic of early public-utility financing. But it may be less easy for them to understand this when it is pointed out that such entries, while sometimes excessive in amount, often refer to expenditures of time, energy and ingenuity for the cost of which no other entry appears on the books. The promoters of a company may have given largely of their time and energy to its organization and taken their entire compensation in discounted bonds and bonuses of stock, which the careful accountant promptly rules out, as of no use for his purpose, when he later investigates the books. The strict methods of technical accounting do not permit him to go further and investigate how much these expenditures of time and energy contributed to the actual cost of the property.

If the book or historical investment is that upon which the company is to be entitled to a fair return, it must take into account such expenditures as these, even if they do not appear completely in the book records. The interest during construction, also, may not actually be paid to the stockholders who put up the money, but the interest which they

forego during that period is none the less a part of the cost of the plant because it was not paid in cash and does not appear upon the books of account. Practically never, too, except possibly in the case of companies started within the past few years, has proper account been taken of the deficit below a fair return during early periods of operation and the proper portion thereof, that should be charged to capital account. For such reasons, in an experience of a number of years, covering a large number of appraisals, the speaker has never known of a single case in which it was considered that the book records of cost were complete, and represented the original, actual and total cost.

It is here, in the opinion of the speaker, that cost of reproduction has its real application and importance, namely, in aiding a judgment in arriving at a fair estimate of the actual, original historical investment. Original cost should be determined from records as far as possible, and estimated for all items for which records are not complete. Even if no book records are available it is possible to make an estimate of historical cost, based on original conditions and cost of labor and materials at the time of construction, in so far as this information is available, and make reasonable allowances for the probable cost of items in connection with the non-physical elements. But the difficulty of making a complete estimate of this character should always be borne in mind, and even where books and records appear to be reasonably complete, the cost of reproduction new as of today may be of assistance as a test of their completeness and a guide to judgment in arriving at a final conclusion.

Where no book records at all exist, the cost of reproduction will be extremely helpful and, by taking into account and making allowance for the elements of cost of reproduction which are known not to have been incurred in the construction of the existing plant, and by making proper allowance for changes in the cost of labor and material from the date of construction to the time of valuation, as well as for elements of cost which may have been omitted because of incompleteness of records, it may well serve as a suitable foundation upon which to base a fair estimate of probable reasonable original cost. If even records of the physical property are not in existence, so that the portion below ground cannot be accurately determined, it may even be useful to make an estimate of the cost of reproduction of a suitable plant for performing the required service; making this the starting point of the study which has as its object the determination of the probable reasonable original investment. But in all these cases the writer insists that in order that cost of reproduction shall be useful as a guide to judgment, the estimation must be based upon a complete and logical conception of the reproduction of the plant at the time and under the conditions and with the normal prices of labor and material existing at the time of the investigation.

For the determination of original cost in this sense the work of the accountant is not sufficient. The accountant considers only the property account as it appears on the company's books and eliminates therefrom every item which is not supported by such complete records as to convince

him conclusively of the nature, amount and purpose of the expenditure. In determining the true investment, however, all items bearing on the history of the plant, as well as the experience of other companies in the same field must be taken into account. And, instead of taking as final the judgment of the person who made the original book entries as to what should be put on the books and how it should be entered, account must be taken of transactions which never appeared on any books, and book entries must be interpreted so as to arrive at actual costs which may be very different from the expenditures recorded.

LOOKING FORWARD

The speaker recognizes that this principle upon which he is in agreement with the other speakers (although he may differ with them as to its application), is considered by many as contrary to the law as now laid down by the Supreme Court of the United States, and he appreciates that it will be attacked as contrary to the fundamental law regarding property rights, the Constitution of the United States in the Fifth and Fourteenth Amendments, and the constitution and legislative enactments of the several states. But he has already stated his belief that to the extent that the courts recognize cost of reproduction as the sole measure of fair value, they are in error, and will eventually correct this by a reversal of position.

He believes, also, that the courts will be able to pierce through the fallacy that the basing of rates on actual original historical cost is a taking of property without due process of law, and therefore unconstitutional. Dozens of decisions contrary to this opinion can, of course, be cited, and one such has already been quoted by the speaker. The Consolidated Gas case is a leading expression of the United States Supreme Court, with special application to land value, and there the court said with unmistakable clearness:—

“And we concur with the Court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates has increased in value since it was acquired, the company is entitled to the benefit of such increase.”

As long as the property right of the private owner in the unearned increment of land value is recognized, and until a changed public policy and a new system of taxation are evolved, the courts will be slow to abandon this position. But as land is a particularly good example of the point the speaker desires to make, he will use it for illustration.

As pointed out by Mr. Eshleman, however, value in its philosophic and economic significance is essentially subjective and dependent upon the purpose to which the property is to be put, as well as upon the needs and resources, both of possible purchasers and of the owner. Expressed in money it

is the capitalized net return in money or in use, which the owner may expect to enjoy through his ownership. And increase of value in this sense results from change in character of use, or from increased income which the owner may receive by reason of his ownership. No question of change in character of use enters into the problem of the value of land held for public utility purposes; and such land has increased in value because of increased income only if it is first established that such increased income is equitable and can be received. As soon as the principle is recognized that a public utility is entitled to receive in return for what it devotes to the public use only the fair equivalent, namely, a fair return upon the actual reasonable investment, the right to receive income in excess of a fair return upon the original cost of land vanishes. The capitalized value of such income over and above a fair return on the original cost ceases to be property, and the restriction of rates to a fair return upon actual investment ceases to be a taking of property without due process of law. In other words, to value land on the basis of capitalized income greater than a fair return on its original cost in order to determine the income that may be earned on it is just as much reasoning in a circle as to value a public utility on the basis of capitalizing total net income, when such net income is in excess of a fair return upon the actual reasonable investment.

Nor is there any essential injustice in this solution of the problem. The relation between the public and the public utility is of the nature of a contract,—a trusteeship, if you please. The investor agrees to devote to the use of the public certain amounts of his money, time and energy, all of which may be reduced to dollars and cents and called his actual investment; the public in return agrees to protect him from competition, to grant him the use of certain public property, and possibly other special privileges, and to pay him a certain per cent of return on every dollar of his investment. If each side fulfills the terms of this agreement neither can claim that the ends of justice and equity have not been satisfied.

RECAPITULATION

To summarize the point of view in this discussion, the speaker believes that the complete original cost is the true measure of the total actual investment in or fair value of the property of a public utility. There is danger, however, in estimates made by novices and inexperienced appraisers that a realization of the actual experience of utility companies may be lacking, and thus that sufficient allowances may not be made for all elements and items of investments. Reproduction cost new, with all proper allowances for appreciation and depreciation, is an excellent guide, and in the absence of history and when used with judgment, may be used to form an estimate of complete investment which will be fair alike to the utility and the public.

DISCUSSION OF MR. ESHLEMAN'S PAPER ON "A CRITICISM OF THE REPRODUCTION THEORY OF VALUATION"

BY HALBERT P. GILLETTE

Consulting Engineer, New York

There are two fundamental theories of public utility valuation, the "agency theory" and the "competitive theory." Several years ago I first coined these terms and published an article showing that few, if any, courts, commissions or engineers had consciously recognized the existence of the two different premises upon which they had attempted to base their valuation. At that time I espoused the "agency theory" almost without reservation, as Mr. Eshleman now does. But since then I have come upon many cases that have led me to question seriously its general application.

The "agency theory" in effect was, perhaps, first suggested in a railway rate case by Mr. Brooks Adams in the "Spokane Rate Case" before the Interstate Commerce Commission. As I remember, he argued that the railways were and always had been "trustees" and that all that they had earned in excess of 6 per cent on their actual investments was held in trust for the public and did not belong to the stockholders. Commissioner Prouty rejected this contention as being legally and practically untenable. If 6 per cent were a "fair return," and more than 6 per cent had been earned, those individuals who had paid the excess could not even be found. Should the excess, therefore, be handed back to some other individuals called the "public"? Judge Prouty could see neither equity nor legality in such an action.

Now let us reverse the condition, and take a railway that has earned less than 6 per cent—which probably applies to the majority of railways—then according to the "agency theory," such a railway could claim that the "public" should make good the deficit. But here again, we must ask what "public"? The people who failed to pay adequate rates? Or some other people? The problem in equity is a poser.

As I look at it now, we have all been trying to do the impossible in sticking to a single theory. Mr. Eshleman, as he says, proposed nothing new when he advocates the "agency theory," and there is nothing new in the proposal that it be made retroactive. But certainly if it be made rigorously and wholly retroactive it leads not only to absurd results in many cases but to positively unjust and often illegal acts.

Having now before us two clear cut theories of appraisal, why is it that intelligent and fair-minded men differ so radically as to which should be selected? I think the answer can only be found by those who recognize the existence of *evolution* in morals and in economics. What is "right" today has not necessarily been always right. The "agency theory" of regulation of railways and public utilities is becoming—has not yet become—right and it may be economic. Only a few years ago it did not even exist, save in what may be termed its protoplasmic form. Today, even, it is not fully organized.

Mr. Eshleman says: "The discussion of valuation with

relation to railroads as applied to rate controversies has until recently been of the most general character."

True, and as a corollary thereto, we must add that the discussions have been gradually evolving the new theory of agency relationship. It sprang from no head full grown. Yet it is seriously proposed to make this new theory retroactive in valuing railway and utility property in all cases. At least that is the general proposition, but it remains general only until it leads to enormously high values. Then public commissions are apt to be quite agile in finding exceptions to the general rule. Let them find a utility that has suffered great deficits in fair return, do they then find ways to recoup the deficits? Not at all. They then throw most of the deficits out on the ground that they were "not reasonable," that the company was ill managed, its plant "overbuilt," or what not.

It is a peculiar theory, indeed, that serves to deprive a successful company of its plant by giving it only a theoretically depreciated value thereon, yet also deprives an unsuccessful company of its "deficits in fair return." The same theory is made to serve to take away a "surplus" from one company and a deficit from another.

Mr. Eshleman points out what seems to him to be two fatal objections to the "reproduction theory"—which is the "competitive theory," at least in part,—but what of the really fatal objections to the "agency theory" when made retroactive?

If neither theory is free from objections when made retroactive, what must we infer? My answer is that there is no thoroughly logical theory that can be applied where evolution has produced a condition such as here confronts us, and that some sort of compromise must occur. As a *fact* these railways and utilities neither have been full public agents nor are they so even now in any state in the Union. In California, to which Mr. Eshleman specifically refers, the City of Los Angeles is now building an electric power system to compete with electric companies and the Railroad Commission has no power to stop such competition. Is this an application of the "agency theory" of public utility control?

Mr. Eshleman mentions two private California water works "reduced to junk" by public competition. Is this evidence either of an agency condition or of a "monopoly"? Any one can cite scores of just such instances and usually the worst cases are in the very states that claim to have adopted the new agency theory of rate control. Surely, then, the theory is both new and unapplied save in part. And, if so, where is the "logic" in speaking of it as something that always has been?

Closely woven in the general web of error is the claim that these utilities and railways are "monopolies." If one thing has been made clear to me by my ten years of appraisal

work for utility commissions and companies, it is this: *No utility or railway is or has been free from competition, existent or potential, and usually competition has served to keep rates down to, or even below, a fair return on the invested capital.*

When I first began to realize that the railways and utilities were not the gold mines they were popularly believed to be, I thought that I was finding merely the exceptions and that soon I would come upon the real gold mines, but I have learned that what I conceived to be the exceptions were the rule.

Competition in the electric lighting field exists and always has existed. The electric light companies had to meet at the very start, and still meet, the kerosene lamp and the gas light. Electricity forced these slowly but surely into the background but not out of existence. And in the forcing process, electric light prices steadily fell. Then came a potential competition that often became actual. I refer to the building of competitive electric plants by other companies and by municipalities.

"Monopoly" of public utilities and railways is also one of those products of evolution that is yet in the process of development, having never really existed save in most incomplete form. Yet Mr. Eshleman's argument is built upon the assumption not only of present but of past conditions of monopoly. He says:

"But in the realm of a public utility we have a situation that is peculiar. We have here an agency that to many of its patrons is always a monopoly. . . . Our main assumption is that these agencies are and of right ought to be, upon considerations of sound economics, monopolies."

That they are monopolies, save in part, I deny. That they ought to be monopolies in the future may be sound economics, provided there always goes with this condition the full protection that the agency relationship implies. But, I ask, what railway or public utility commission is striving to apply to the fullest this monopoly rule? The "jitney buses" have had disastrous effect upon many street railways. There may be a public service commission somewhere that has been laboring to eliminate "jitney" competition, but, if so, I have not yet heard of it.

I mention such things not in criticism of commission but as evidence of failures to apply the "agency theory"; such facts make very clear that we are still in an evolutionary period as to public utility regulation.

I agree with Mr. Eshleman that "If we had this problem in the beginning and were not attacking it in the middle, we would have no difficulty in agreeing with the holder of capital upon this subject." I also agree that "for the future" the agency theory in some form must apply. But this does not get us over our difficulties when we attempt to straighten out the "past," in order to start with a clean slate. There is the rub, and Mr. Eshleman's method fails to rub the slate clean. Legally it fails at many spots. Thus, the United States Supreme Court holds that land and "water rights" must be valued not at their actual cost but at their "present value." Shall we attempt to interpret such decisions so as to render the "present" value of little or no value to the companies?

But, it is said, courts are not consistent. Granted, and what of it? They are human and often possess less knowledge both of theories and facts than we do. Does not their very inconsistency bear out my contention that nothing short of a compromise is possible where neither the "agency theory" nor the "competitive theory" has existed in full and where both have existed in part? Let us cease battering our heads against the impossible, for no clean cut single theory exists or can exist that will apply in every case in valuing railway or public utility property built and operated in the past under hybrid conditions.

Further, is it fair to impugn the motives of the railways and utilities who defend the reproduction theory? Would it not be equally unfair to attack the motives of their impugnors? Are "monopoly lawyers and engineers" less honorable than municipality or state lawyers and engineers? To me it seems that to be obsessed by either of the two theories of rate regulation is to be blind. I admit that I have been blind, and I speak in no carping manner of others who still are blind or who, at least, see as through a glass darkly.

Mr. Eshleman holds that an engineer should testify only "upon questions of fact" and that an engineer "usurps the function of the governmental tribunal before which he testifies" when he presumes to state the "value" of property involved. This is a matter of opinion, and, being an engineer, perhaps I am a biased debater on it. I know, however, that I have never seen or heard of an appraisal made by any engineer that was any the less based on "questions of fact" because it resulted in a statement of the final fact sought—the "value" of the property.

Even what Mr. Eshleman would denominate a "question of fact," such as the "depreciated value" of an engine, is founded on some theory of depreciation. Yes, and the very "fact" as to the "actual cost" of the engine is founded on some theory or theories of accounting. Assumptions and theories are the very foundation of every appraisal, both of physical and non-physical property. Shall the only experts qualified to pass on the application of the assumptions and theories be debarred from expressing opinion thereon? Is there something of the "divinity that hedges kings" in a "legal tribunal" that makes the "tribunal" alone competent to pass on anything save alleged "facts"? Can a commissioner, for example, who knows little of accountancy and less of engineering, unguided by the opinions either of accountants or of engineers as to theories, pluck from the sands of testimony the pearl, "value," which no other eye can be relied upon to see?

It may be wise for an engineer who has only part of the evidence before him to refuse to pass upon the final "fair value" of a property, but surely there is nothing illegal or presumptuous in his giving his opinion as to "fair value" if he is in possession of all essential facts. Indeed, in such a case, I believe a well-qualified engineer to be as good a judge of utility or railway "value" as can be found.

"Mankind, as a whole," says Mr. Eshleman, "is interested in any plan which tends to determine rewards in relation to effort." This is a good phrasing of one of the greatest of economic laws. But, as I interpret it, it leads to quite

a different result than the one proposed by most rate making commissions, namely, the holding of a utility down to a definite percentage of "fair return" on the "value" of the property. To apply this law of "reward proportionate to performance" a company should be allowed a profit on what it *saves* in plant construction rather than on what it *spends*. Marconi should be and is rewarded for doing away with the necessity of trans-oceanic cables. But Mr. Eshleman's fair return on the investment rule would positively penalize genius, and, in practice, it does penalize both genius and normal ability. Therein, as I view it, lies the gravest defect of the present rate regulative activities. The regulators have it that value—true value—henceforth must go into oblivion. If it does, then there goes to the same realm the law of reward proportionate to performance. Let another Harriman create values, true values, by reducing transportation costs, and the present theory of rate regulation will be used to confiscate them as soon after creation as possible.

This is too vast an economic subject for me to do more than mention. But I mention it in the passing to indicate that value and competitive excellence cannot be as lightly blown into oblivion as some would have it, and as many, indeed, are right now attempting to blow it under the guise of judicious regulation of rates.

Mr. Eshleman says that the return to a utility company should be only "the cost of doing the business plus a return on the capital necessarily invested in the business," and that this "is all that ought to be accorded for the future and it is all that will be accorded if the public has any business sense." This theory is in complete discord with his previously quoted statement that the reward should be proportionate to successful effort.

A return based solely on cost is, as I conceive it, the most blighting theory that has yet settled upon this country. It is destined to drive brains of the best order and courage of the highest type into occupations other than those of public utility nature or into foreign lands, seeking escape from a rule that penalizes progress.

Our rate regulators, for the most part, deny that this is what is happening or will happen under their theory of "fair return on the investment." But the facts are against their beliefs. It is not the war alone that has brought to a pause all hydro-electric development in Mr. Eshleman's state, for example. The mere threat of confiscating all profits above 8 per cent on the actual cost of investments in power properties has, I think, done more than any foreign war could ever do toward putting brakes upon these enterprises. And it is so on every side and in every class of public utility and railway.

Since Edison invented the incandescent lamp, thirty years ago, its candle-power efficiency has been increased twelve-fold per watt of current used. At the same time, the price of current had also dropped amazingly, long before public rate regulation had been even suggested. By comparison how really insignificant have been the lighting rate reductions effected by commissions. Yet the mere threat of confiscation of the profits due to further economic progress has chilled

the stream of capital until it may now be said to be only a glacial river, scarcely moving at all in many places.

The value of a public utility is the present worth of its prospective net earnings (or "profits"). If, by regulation, this value is to be henceforth restricted to actual cost, all incentive to increase profits by skillful engineering and management forthwith dies. We are, I fear, now witnessing the death throes. And, if so, we may soon enter upon the era that has existed for a long time in Europe, where not a single noteworthy advance in any railway or public utility art has been recorded in a generation.

Mr. Eshleman contends that there are "two absolute bars to the application of the reproduction theory of valuation of utilities." The first of these bars is the "impossibility of imagining the monopoly never to have existed" yet with monopoly results still there. He quotes Justice Hughes on this "impossibility." Now the fact is that this difficulty is one bred of an entire misconception of the underlying principle of the reproduction theory. The reproduction theory, when rightly interpreted, implies competition, actual or potential, and it does not imply a reproduction of the existing utility plant but of a substitute or alternative plant.

A utility company that owns a plant may reasonably claim that the best test of its value is the cost of producing another plant that will perform the same functions. This, of course, implies possible competition. And, if the utility company fully understands the theory, it may also claim that the cost of building up a similar business under competition is a measure of the maximum value of its existing business to a prospective purchaser of the plant. The company does not at any time claim to be or to have been a monopoly. It stands ready to become a monopoly if the public so wills, and it may be desirous of becoming a monopoly; but it denies being or having been a monopoly, and it points to the public's legal right to compete with it as evidence of that fact.

Having come to a parting of the ways, the utility company demands a valuation based on the cost of the best alternative plant plus a consideration for the cost of securing an alternative business attached thereto. This is strictly on a competitive basis of value, and it asks that that basis be considered, for upon that basis it has lived. But, acting as a wise business man usually does, the utility company stands ready to accept a value less—often far less—than the cost of building an alternative plant plus the cost of securing an alternative business. Often all the utility asks is the bare cost of reproducing a new plant without adding thereto the cost of building up its business. The public would be economically crazy were it to reject such an offer.

Justice Hughes' objection to the reproduction theory as applied to right of way vanishes the instant it is seen that it is not the identical existing right of way that is to be conceived as existing without a railway thereon, but that it is the cost of an alternative right of way that is the criterion of value of the existing right of way. It is true that the railways have not hitherto made this distinction apparent, but, once it is made clear, every logical difficulty vanishes.

Mr. Eshleman's second "bar" to the reproduction theory

is the "impossibility of thinking monopoly and competition at the same time." But who is trying to do so? Certainly not the utility companies. In the past they have certainly "thought competition" but for the future they are prepared to "think monopoly." They are at the threshold of the change, and they ask the public rate regulators not to try to think a monopoly in the past that has never existed there, save perhaps in relatively minor degree.

I have said that I believe there must be a compromise between the extreme attitudes of the utilities and the public. This compromise, as I view it, should be based largely upon the degree in which the utilities have actually been treated as full agents by the public. In short we must look to the history of each case for our answer as to the degree of weight that should be given to the "reproduction theory" and to the "actual cost theory" of valuation of property built prior to regulation. I do not suppose that this is exactly what the Supreme Court had in mind when it rendered the *Smythe vs. Ames* decision, but certainly that decision is broad enough to permit a public rate regulating body to take the common sense view of the matter above suggested. Even more certain is it that the Supreme Court will not countenance the extreme views taken by Mr. Eshleman any

more than it will countenance the extreme views often taken by public utility companies.

While I have pointed out the nature of the premises upon which the reproduction theory properly rests, I do not go so far as to claim that it is always rigorously applicable in practice. In the case of a small, simple plant the full reproduction theory can be applied quite rigorously, but in a large complex plant it can be applied only approximately.

Finally let me add that even the advocates of the agency or cost theory themselves rarely—if ever—stick to it. Almost invariably they deduct estimated accrued depreciation from the cost of the plant, and when they do so, they invariably deduct functional depreciation due to "obsolescence" and economic "inadequacy." But when they do this they are actually setting up an *alternative* up-to-date plant as their criterion of the value of the existing plant. They preach *actual cost*, but actually they practice *value*; at least in part. To me this is one of the most interesting logical blunders that can be found in the whole history of political economics. There is no such thing as *depreciated cost*, but there is such a thing as *depreciated value*, and it is the latter—a *value*—that these very advocates of the *cost* method adopt.

FALLACY OF THE "REPRODUCTION COST" THEORY IN DETERMINING THE VALUE OF PROPERTY OF PUBLIC UTILITIES

BY A. B. DU PONT

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In ascertaining the height of a mountain, it is not necessary to ascertain either its bulk or the nature of its composition.

Why, then, in ascertaining the value of a public utility, is it necessary to ascertain either its present reproduction cost or its original cost?

That the physical property of the utility cost much or little originally, that the present cost of reproducing it would be much or little, and that it is in good condition or bad, are facts. But these facts have no more bearing on ascertaining the value of the utility than the facts that a mountain is composed of gold-bearing quartz or common stone, or that there has or has not been erosion of its surface, have bearing on ascertaining the height of the mountain.

Erosion may have caused a reduction in the height of the mountain; depreciation may have caused a reduction in the value of the utility. But it is more foolish to estimate the amount that its physical property has depreciated, in order to ascertain the value of a utility, than it would be to estimate the amount of the erosion in order to ascertain the height of a mountain, for the reason that the height of the mountain will have been decreased in proportion to the amount of erosion at its summit while the value of a utility will not have been decreased in proportion to the amount of depreciation of its physical property. In fact, depreciation of any or all of the parts of its physical property, resulting in lowering of taxes, has a tendency to increase the

value of the utility, but this tendency toward an increase in value may be partly or wholly nullified or even outbalanced by the increased cost of production due to the use of the depreciated physical property.

The utility has certain physical property and it must use this particular property in manufacturing its product, no matter what was its *cost* or what is its *condition*. The only value which can attach to the utility, so long as it continues to be a utility, arises from the sale of this product.

The idea of using either the reproduction cost or the original cost of the physical property of a utility in determining the value of the utility is so absurd that the writer is at a loss to understand why he or anyone has ever accepted it. However, the fallacious theory is very generally recognized today, and, so long as utilities are forced, by government power, to accept as value the estimate resulting from its use, justice is imperiled by it.

A few illustrations will serve to demonstrate the absurdity of these theories.

HYPOTHETICAL ILLUSTRATION NO. 1

Assume two public utilities located in the same or different localities, owned by identical individuals, both in normal operating condition; cost and reproduction cost of physical property and earnings identical, but expenses differing 10 per cent.

Manifestly, the value of the utilities would not be equal. How, then, could we make use of the knowledge that *cost* and *reproduction cost* of the physical property were equal in determining the *value* of the utilities. The difference in expenses may be due to various causes beyond control of the management, *e.g.*, in a street railway, difference in grades, difference in speed at which it is practicable to run cars, difference in the length of the ride of individuals, or the difference in expenses may be due to a difference in efficiency of management.

Whatever the cause for the difference in expense, so long as it is expected that the difference will continue to exist, and so long as it is expected the earnings will remain the same, the *value* of the utilities will remain unequal although the *cost* or *reproduction cost* of their physical property remains equal.

HYPOTHETICAL ILLUSTRATION NO. 2

Assume the same utilities with the same ownership, cost and reproduction cost of physical property and expenses equal; both in normal operating condition, but expected earnings differing 10 per cent.

Manifestly the value of the utilities will not be equal, whether the differences in earnings be due to natural advantage caused by conditions beyond the control of the owners, such as better market for disposal of product in proportion to the expense or be due to the difference in efficiency of management in stimulating earnings without increase of expense. No matter what the cause, the fact that the *cost* and *reproduction cost* of the physical property of the utilities are equal cannot be used to explain the difference in the *value* of the utilities.

HYPOTHETICAL ILLUSTRATION NO. 3

Assume the same utilities with the same ownership, both in normal operating condition, with cost and reproduction cost of physical property equal, and expenses and earnings equal. In the judgment of the owners, however, one utility will require a greater effort upon their part than the other, to obtain the like results, for which effort they receive no pay other than a share in the profits.

Manifestly, the fact that the *cost* and *reproduction cost* of the physical property of the utilities are equal will not help in determining the relative *value* of the utilities because the value would be unequal, and the difference in value would be wholly dependent upon the difference in the expected effort required from the owners, in order to obtain the same relation between the expected earnings and the expected expenses.

HYPOTHETICAL ILLUSTRATION NO. 4

Assume the same utilities; same ownership; both in normal operating conditions with expected earnings and expenses equal. Would the fact that the original or reproduction cost of the physical property of one of the utilities was 10 per cent greater than the other, be an element that would aid anyone in determining the relative value of the utilities?

Manifestly not, for the two utilities would be of *equal value* unless their value was affected by other considerations,

lying entirely outside of the hypothesis, such as a difference in the amount of effort required from the owners to get like results from the use of the utilities.

There may be many reasons for the difference in the cost or reproduction cost of the physical property of the utilities even when equal wisdom was used in creating the physical property, such as the necessity to create more physical property in order to obtain the same earnings, the greater obstacles necessary to overcome in creating the physical property of one utility over the other, higher land values, etc., in fact, almost innumerable differences caused by differences in the problem presented to the owners at the time the utilities were being created.

When we add to these differences the difference in costs caused by the difference in foresight of engineers, and the difference in efficiency of individual constructors of parts of the physical property of each utility, we enter into a maze that is so infinitely confusing that it is, indeed, fortunate that the amount, which the utility has expended upon its physical property, has no more bearing upon the value of the utility than the price that an individual farmer pays for his land has bearing upon the value of the wheat he produces.

The *value* of the utility, so long as it is a utility, is not in any way dependent either upon the cost or the reproduction cost of its physical property, nor upon the price at which said physical property can be sold when detached from its use as a part of the utility, but is solely dependent upon the capitalization (at the rate money is worth to the owners of the utility) of the difference between that part of the return from the sale of the *product*, which the owners of the utility expect will be available to them, and the value which the owners attach to their effort in causing the utility to produce and dispose of its product.

The value of any property is the price for which the title to it can be purchased, and the facts stated in the foregoing paragraph determine the price at which the owners of the title to the utility will sell their title to it.

From what has heretofore been written, it is certain that the value of any public utility is wholly dependent upon the difference between its expected earnings and its expected expenses. Hence, as public utilities are in part created by government assent, and as the earnings of the utilities may be limited by government decree, and as their expenses may be modified by government action, it necessarily follows that the value of any public utility is finally dependent upon the expected difference between its earnings and expenses, resulting from future activities caused by the owners, within limits expected to be permitted by government. Hence it follows that the value of the property of public utilities can be altered by government through decreasing their earnings or through increasing their expenses or both.

Mr. Eshleman has properly warned the owners of public utilities not to attempt to obtain recognition of "threat values" or, as I prefer to call them, monopolistic values. I wish to warn the public and the public officials that at least the non-monopolistic value¹ of the property

¹A pamphlet on this subject may be secured by addressing the author: 901 American Trust Bldg., Cleveland, Ohio.

of public utilities must be recognized by government or money can not be had for extending their services to the public, and even the service that they are now rendering may necessarily be curtailed.

This problem must be solved because, even though we drift into government ownership, government cannot know its cost of rendering public utility service until this problem is solved. This for the reason that it cannot know the risk to which government money will be subjected when invested in what is now public utility property.

Present methods of accounting do not take into consideration the risk of investment in either privately owned or

government owned public utilities. However, the accounting of privately owned public utilities does not mislead their owners, because they know the difference between book value and real value. But I am afraid the accounting of government owned utilities is tending to mislead government officials and the public and will continue to do so until there is charged to the cost of service, interest on the money invested in the property at the rate which would attract capital to possess the property if it were placed on sale.

Until this is done, book values cannot express real value, nor book costs express true costs of rendering service.

OPEN DISCUSSION

MR. JAMES E. ALLISON, *Consulting Engineer, Former Public Service Commissioner, St. Louis, Missouri:*

I might offer a word to clear up lack of agreement in terminology, if I present the idea, that a commission can not, in rate cases, *find* an existing value, using the word "value" as exchange value. The business of the commission is to *create* a value, not to find an existing value. There is no determinable value until rates are established, because rates determine returns and returns determine value; but a commission can try to *create* a value, which should be a just amount,—an amount which would have induced the creation of the utility. This amount being determined, its exchange value can be made par by giving it the proper rate of return.

The idea that commissions or courts must *find* existing value in rate cases is the cause of a great part of our present confusion; they are creating a value, not finding it.

MR. ESULEMAN:

I do not think any confusion exists among the speakers that apparently some think exists, but if you can forget all about the word "value" and understand that we are trying to find out an amount upon which earnings should be allowed, or an amount which should be paid when we purchase, and remember that this amount has no more to do with value than it has with the moons of Jupiter or Saturn, whichever has moons, we will avoid extra talk and confusion. There is no question that we are not talking about value; it has no place in this discussion; it is foreign to it.

HOW TO GET RID OF THE REPRODUCTION COST THEORY

BY G. W. ANDERSON

Attorney-at-Law, Boston, Mass., formerly Public Service Commissioner of Massachusetts

THE theory of reproduction cost as a basis for rate making has become a serious public menace. Little time need now be spent in pointing out its fallacies, absurdities and injustice. This has been thoroughly done by others. It is enough now to refer to the keen and caustic analysis of this theory by Commissioner Lane in the Western Advanced Rate Case¹; to the demonstration of its absurdity and injustice by Chairman Stevens in the Buffalo Gas Case²; and in the Cataract Case³; and to the unanswerable criticism of it in Commissioner Max Thelen's elaborate paper printed in the 1913 report of the Convention of Railroad Commissioners. Prof. John H. Gray, of the University of Minnesota, in an address before the Economic Club of San Francisco and elsewhere, has also shown how utterly impossible of sound and honest administration this theory is.⁴

This theory and its menace were indeed one chief cause for creating this Utilities Bureau to assist in the just and sound solution of utility problems.

The topics selected for this conference indicate the serious concern this theory is giving to all who desire fair, equitable and stable relations established between the security-holders of our utilities and the using and rate paying public.

With us in Massachusetts the theory is a live issue. Most of our Massachusetts gas companies have large surpluses derived largely from excessive rates permitted by the regulating commission when undue fear was felt as to the effect of prospective electric lighting competition, besides much real estate, in considerable part not used for gas purposes. Upon all these surpluses and upon all the increasing value of this real estate, the gas companies are now claiming the constitutional right to have a return. Our Gas Commission has never yet conceded this claim, but their rulings indicate some terror of the theory.

The lawless and wasteful career of the recent, but now deposed, management of the New Haven Railroad was undoubtedly prolonged by the use made of this reproduction cost theory in an engineer's report made to the Validation Commission of 1910 (See Mass. Acts 10, Chap. 652), adopting the most excessive form of this theory, stating, "Physical valuation, either for purposes of *justifying the rates* or capitalization, should fairly allow the appreciated value of real estate and any other elements which have appreciated without

allowing loss for depreciation of elements which have depreciated, provided the property is maintained in good condition." Such was the absurd basis for the absurd current report that the New Haven Railroad had a surplus of over \$100,000,000, in spite of its losses of, probably \$100,000,000, from such illegal investments as the Rhode Island trolleys, costing the New Haven over \$24,000,000, while worth, as this same engineer found (without franchise), \$2,440,679. This mythical surplus of \$100,000,000 was falsely

published in financial papers in the pay of the New Haven as a finding of the Validation Commission itself and was used in all sorts of ways to conceal from the stockholders and from the public the enormous and illegal wastings of the company.

In the last report of the New Haven's President to the stockholders for the year ending June 30, 1915 (page 24), he says, when dealing with the losses suffered by the company through its outside investments, that these losses have not yet been charged off to profit and loss, but that the directors now think it wise, "Simply to state that there may be large losses which may be offset, all or in large part, by proper valuation of the property." A suit is now pending against the former management to recover alleged losses of \$102,000,000. The present management has refused to carry on this suit. In this report of the President we now have plain notice that reproduction cost is to be relied upon to offset capital lost and wasted under the administration of the deposed management.

PART II

ORIGINAL COST

WHAT IT IS

HOW IT CAN BE ASCERTAINED

ITS CONSTITUTIONALITY

ITS IMPORTANCE AS THE CHIEF BASIS IN
FAIR VALUE

THE MASSACHUSETTS IDEA:

FAIR RETURN ON ACTUAL INVEST-
MENT PRUDENTLY AND HONESTLY
MANAGED¹ 20 L. C. C.² 3 P. S. C., 2nd Div., N. Y., 553.³ 3 P. S. C., 2nd Div., N. Y.⁴ See 4 Am. Econ. Rev. Supp. 1914, p. 82.

It is disconcerting to find this notice coming just as our New England public was beginning to recreate its utterly shattered confidence in the soundness and wisdom of our railroad management. It declares a new war on the rights of the public. Massachusetts will never willingly accept as a basis for rates the fantastic and mythical "values" of overpaid and highly imaginative experts as a substitute for honest dollars put at the public service. The theory has thus already indirectly done New England much harm, though not yet, so far as I know, ever there officially approved and enforced.

In the brief filed with the Interstate Commerce Commission by the Railroad Presidents' Conference Committee with reference to the basis of the valuation now being made, page 157, *et seq.*, I find the claim that the force of gravitation that makes the roadbed solidify is value to be treated as the practical equivalent of capital contributed. This and other analogous claims give good ground for the hope that this theory may yet find its death in the extravagant absurdities of its advocates.

The statement in Mr. Whitten's 1914 supplement to his *Valuation of Public Service Corporations*, Sec. 1010, "Little progress has been made toward a definition of fair value for rate purposes" is absolutely accurate. No progress *can* be made, for the simple reason that value rests mainly on rates and rates cannot therefore be based on the value that rates create. The courts waltz dizzily about a circle—valuation to rates, rates to valuation—and arrive—nowhere. It is a process as scholastic and fruitless as the mythical inquiry as to which came first—the hen or the egg.

I shall indulge in no extended analysis of the impossibilities of this theory: It is both farcical and fraudulent. I regard both its logical absurdity and its practical inapplicability as demonstrated. We have now reached the point where the real questions are: How to get rid of it? What shall we substitute for it? These important questions I propose to treat briefly, and, as I am fully aware, inadequately.

As soon as one begins an analysis of the principles and forces that today control rate making in this country, he is struck by a curious anomaly. The reproduction cost theory is entirely an outgrowth of court rulings made in rate cases. No legislature assisted in its creation. But it is elementary that rate making is a legislative and not a judicial function. This the courts constantly reiterate. For instance, in the Minnesota Rate Case, 230 U. S. 352, 433, Mr. Justice Hughes says: "*The rate-making power is a legislative power and necessarily implies a range of legislative discretion. We do not sit as a board of revision to substitute our judgment for that of the legislature or of the commission*

lawfully constituted by it, as to matters within the province of either."

But in spite of constant assertion by the courts of two elementary and really controlling doctrines: (1) that rate making is a legislative and not a judicial function, and, (2) that the courts have nothing to do with rate making except to prevent their being used as a vehicle of robbery, by depriving owners of public utilities of their property without due process of law,—we find that in fact neither proposition is observed by the courts. It is undeniable that in the United States rates are today made by the courts. Our Supreme Court is, for all practical purposes, sitting as an appellate rate making, and therefore as a legislating, body.¹

The result of this assumption by the courts of legislative functions has been as confusing and mischief-working in rate regulation as analogous encroachment was found in master-and-servant law. In both instances the courts have proved very poor legislators. We have not yet forgotten the long struggle we had in getting rid of bad industrial-accident laws made by the courts. It will be remembered that a considerable number of the Judges persistently held the notion that their own pet economic and social ideas were firmly embedded in the Fourteenth Amendment and therefore a part of the supreme law of the American land.²

In New York it took a constitutional amendment to rescue the legislative power from destruction by the judiciary.³ But much progress has been made during the past ten years in bringing the courts back to the same and necessary recognition of the limitations of their own power, which some of them, notably Mr. Justice Holmes, have always held.

In *Commonwealth vs. Perry*, 155 Mass. 117, decided in 1891, Mr. Justice Holmes dissented from the decision of the majority of the Massachusetts Courts holding the Weavers' Fine bill unconstitutional. From that year down to the present he has frequently recorded himself,—sometimes in a minority and recently more frequently with a majority,—against the attempts of the courts to hold unconstitutional legislation that they did not approve of.⁴

Without indulging in an elaborate citation and analysis of cases which cannot be reconciled, it is enough now to say that the tendency of recent decisions of the

¹ See Ripley's *Railroad, Finance and Organization*, p. 316.

² Compare *Lochner vs. N. Y.*, 198 U. S. 45; *Hoxie vs. N. Y.*, *N. H. & H. R. R.*, 82 Conn. 356; *Muller vs. Oregon*, 208 U. S. 412; *Employers Liability Cases*, 207 U. S. 463; *Second Employers Liability Cases*, 223, U. S. 1; *Davis-Smith Co. vs. Clausen*, 65 Wash. 156; *Cunningham vs. N. W. Imp. Co.*, 44 Mont. 180.

³ *Ives vs. Buffalo & R. R.*, 201 N. Y. 271; N. Y. Cons., Art. I. sec. 19; *In re Jensen* 53 N. Y. L. J. (July 28, 1915).

⁴ *Noble State Bank vs. Haskell*, 219 U. S. 104; *Mutual Loan Co. vs. Martell*, 200 Mass. 482; S. C., 222 U. S. 225; *German & Co. Ins. Co. vs. Kansas*, 233 U. S. 389.

Supreme Court of the United States is back towards the old and sound principle of leaving the legislature to perform its own functions, holding unconstitutional only legislation which is plainly obnoxious to the Constitution. This tendency towards sound principle will, if supplemented by proper enactments by the legislature, be found exceedingly helpful in solving the rate-making problem, as it was recently found helpful in giving us Compensation Acts and putting our industrial accident business on a basis humane, just, and capable of efficient and economical administration.

It is an utter waste of time to attempt to analyze and reconcile, even to read, many of the lower court decisions. Most of them are not helpful to a fair understanding either of constitutional law or of sound public policy.¹

Doubtless there are troublesome dicta in some of the Supreme Court opinions,—such as the statement in the New York Case concerning a 6 per cent return and the inclusion of a value for the franchise because of its recognition by state authorities. But the *decision* in that case was a dismissal of the bill,—a vindication of the legislature's control of rate making.² The decision in *Cotting vs. Kansas City Stock Yards Co.*, 183 U. S., p. 79, may prove difficult to reconcile with any workable theory. But even if the Supreme Court should find itself required to overrule this decision, this will be nothing more than has already been done, in effect, as to the doctrine in the *Munn Case*, 94 U. S., that the remedy for unfair rates is at the polls and not in the courts. That court had rather be right than to be consistent. But few, if any, of the actual *decisions* of the Supreme Court stand in the way of the enactment of legislation, constitutionally sound as well as expedient and workable, dealing with the proper relations between holders of securities in, and rate-payers to, public utility companies.

The main difficulty has grown far less out of any actual or apparent purpose of the courts to encroach upon the legislative field than out of the failure of the legislature adequately to occupy its field and perform its legislative functions. The problem that the courts faced, or thought they faced, was the question as to whether the aggregate result of legislatively-made rates was confiscatory. Now the legislatures of most of the states left this problem to be determined by the courts with no basis prescribed for that determination. This failure of the legislatures to determine for the courts the basis for computing left the courts floundering in a morass of chaotic corporation laws and attempt-

ing to deal with the confiscatory or non-confiscatory character of rates of public utility companies capitalized by every conceivable kind of inconsistent and confusing financial method. It really left them to *make* rates, just as the courts have always had to make rates when the reasonableness of any charge made in any business affected with a public interest has come before the court for determination.

At first the attempt was made to induce the court to protect the securities outstanding, however little they represented either investments or "value," determined by any sort of method. This monstrous doctrine the courts refused to accept in the famous case of *Smythe vs. Ames*, 169 U. S. But unfortunately in repudiating this palpably dishonest theory for testing the confiscatory character of a schedule of rates, the court uttered dicta which have in practice proved the chief foundation of the reproduction-cost theory, which, if adopted with all its present claims, would probably be more obnoxious and unworkable than the outstanding security theory.

But the point now to be emphasized is that in dealing with this assumed duty of testing the alleged confiscatory character of a schedule of rates the court had to determine its own basis, *because the legislature had not performed that part of its rate making function*. In the light of experience, it is probable that the courts have done far more harm than good in intervening at all to prohibit alleged confiscatory rates. Confiscatory legislation is like bigamy,—a crime that carries its own punishment. But after the courts had, wisely or unwisely, assumed this function, they found they had no adequate means of performing it. (Compare the language of Mr. Justice Gray in *Dow vs. Beidelman*, 125 U. S. 680.) The next step was to say that the basis was the "fair value of the property used." This sounded well, but has been found on analysis to mean nothing. The natural result is that reproduction cost has been pushed forward, mainly by speculatively inclined corporation managers as a plausible theory for determining "fair value,"—a plan which, if successful, would in these days of increasing prices, work out the most gigantic stock-watering scheme ever devised by the ingenuity of man.

But the points that I would now make, repeat and emphasize are these:

(1) Rate making is a legislative and not a judicial function. This is still asserted by the Supreme Court notwithstanding its contrary practice; and the decisions of that court furnish good ground to believe that the court would welcome an opportunity to be relegated to the performance of judicial functions only.

(2) The interference of the courts is solely for the purpose of preventing confiscation,—to prohibit the states from de-

¹ *C. R. R. Ga. vs. R. R. Com.* 161 Fed. 925; *L. & N. Ry vs. R. R. Com.*, 196 Fed. 800; S. C., 225 U. S. 430.

² *Wilcox vs. Cons. Gas Co.*, 212 U. S., p. 19.

priving security holders of their property rights without due process of law.

(3) In dealing with alleged confiscatory legislation, the courts asserted the fair value basis of rates because the legislatures had failed to provide any basis at all.

(4) "Fair value as a basis," proving in practice a meaningless euphemism, has laid a specious and plausible foundation for the reproduction cost theory.

(5) Now if these propositions are sound, the way to get rid of the reproduction cost theory is for the legislatures to finish their incomplete undertaking of rate making,—that is, declare a basis upon which the aggregate net return shall be computed.

I reiterate that a fair analysis of the decisions of the Supreme Court shows that the door is wide open for the legislatures to resume the rate making powers which the courts say belong to the legislatures but which the courts are in fact themselves exercising.

Now it is agreed that the sole function of the courts (apart from some express statutory jurisdiction quite distinct from the present inquiry), is to prevent confiscation. But what does this really mean? Confiscation of what property, and belonging to whom? This is a concrete question not an abstract one. Whose rights is it that the courts have under the Fourteenth Amendment undertaken to protect by due process of law? Obviously, the rights of the holders of the securities (in ordinary practice stocks only) in public utility companies. It is not the property of the company as such, that the court is interested in protecting; it is only the property of the holders of the securities issued by the company. But in *Smythe vs. Ames*, 169 U. S., the court refused to protect those securities simply because they were outstanding when they bore little or no relation either to original investment or to the value of the property determined upon any arguable theory. Yet it is undeniable that the persons whose rights are the just objects of the court's solicitude are the stockholders of our utility companies. It is they and they alone who are deprived of their just rights when the legislature without due process makes rates inadequate to furnish a just return.

In truth, then, all that due process of law requires is that the rate payers, who may be assumed to be the majority, shall not, through their control of the legislature, rob the security holders whose property the rate payers have obtained the use of.

But what property have the rate payers obtained the use of? Manifestly the property that the investors put into the public utilities.

The basic, lasting and controlling factors as to rate making are the relations between the rate payer and the investor. The legal necessity of creating a corporate machine to hold title to the property purchased

by the investors' money and used for the rate-payers' convenience, is of minor—almost negligible importance. The future of privately owned and managed utilities is not, as some assert, "bound up in valuation." It is bound up in credit,—ability to get capital at fair rates. They are constant capital-seekers. Their promoters and managers are nothing but middlemen seeking to bring investors and rate payers into safe and satisfactory business relations. If these managers join the will-o'-the-wisp chase for speculative reproduction cost values, they will find themselves sooner or later discredited participants in a fraudulent game.

The true function of these promoters and managers is so to intervene between investors (producers) and rate-payers (consumers) as to establish and maintain honest, just and, therefore, satisfactory, relations between these two chief parties to the utility enterprise.

For the sake of their personal reputation, utility managers should at once abandon the reproduction cost theory as utterly dishonest. Public advantage and private interest both demand that utility managers should so perform their duties as to have and be entitled to have the general respect and confidence of the community. The country has not yet forgotten the scandals of the Chicago Railways, of the New York City Railways, the New Haven fiasco and the Rock Island receivership. It must be admitted that as the situation now is these managers cannot *as a class* afford to lose any reputation. The many sound-thinking and fair-dealing men at work in the public utility field should jealously guard that field from further encroachment by speculators, manipulators, exploiters of legislatures and other public nuisances. The public needs the best men in this field. Good men now at work there should realize that their real enemies are some of their own colleagues and associates, not the regulating commissions nor any set of outside critics. These utility managers must see their problem in right perspective. They must fully understand that their proper field is that of investment and development, not that of exploitation and speculation. They are agents. They must realize who their principals really are, or they will find themselves guilty of gross and disgraceful breaches of trust. They cannot advocate the reproduction-cost-theory and faithfully serve their real principals, *viz.*:—the investors and the rate-payers.

For what does the community really ask of private investors when it offers a franchise for the creation of a public utility? Two things,—and only two things: Money and management. It does not ask that private investors furnish lands or rails or engines or gas pipes, or other implements. It asks for capital and the management of that capital. The lands and rails and

other implements are but the secondary results of the devotion of the investors' money to a public purpose. Except within narrow limits the investors and their selected managers have no choice as to the form that their investments may take. They must locate the terminals and roadbed of the railroads as the public interest and convenience require. They may be compelled to build a station here and to abandon one there. If the abandoned site has to be sold at a loss, who should stand the loss? Obviously, the public whose changing needs or desires caused it. They must from time to time adopt such provisions for the public safety and convenience as progress in the art and the public demands require of them. They must buy copper when the public needs it whether it cost 25 cents a pound, or half that price.

If the proposition that all that private investors furnish these public utility companies is money and management be sound, it follows that all that the court in the performance of its anti-confiscatory duties has to do, is to prevent the confiscation of that which is furnished.

The fatal defect in the rulings that the courts have made is that they have failed to see that what the investors furnished, *viz.*,—money, and not what they did not furnish, *viz.*, the ephemeral and changing results of the investment of that money, was the property entitled to protection from confiscation.

Test the question in this way: Suppose a town desires a water system,—is unwilling to finance it on the public credit and have it managed by its town officials; that adequate private capital cannot be interested because of the fear that the cost of the plant will be so great that sufficient takers paying adequate rates cannot be obtained to make a fair return. Thereupon, the town offers to contribute in land or other property, say, one third of the original cost of the plant in order to induce investors to put up the other two thirds. Suppose the charter explicitly provides that a fair return shall be reckoned only upon the two thirds of the capital furnished by private investors. Is such a statute constitutional? Can the Constitution of the United States prevent American communities from creating privately owned and managed public utilities under charters that limit the return to investors to the amount of their investment? Clearly not. Now if this proposition is sound as to a *prospective* utility, it is sound as to an *existent* utility, unless, out of the historic facts surrounding the granting of the charter and the payment of the capital, is to be deduced an express or implied contract that the investors therein were to have a return, not only upon their own investment, but upon land grants and other contributions from the public treasury.

Of course I am not now arguing that charters are to be construed as vesting in their holders a constitutional right to make their own rates or to be free from legislative control. But there is a clear distinction between this claim that the creature of the legislature is greater than the creator, and the proposition that I urge,—which is that the property which is entitled to constitutional protection is the property which was fairly understood to be devoted to the public use.¹

It is well settled law that the title under which a public utility company holds its property falls far short of being a full property right. One of the ordinary incidents of property is the right to lease, sell or exchange it. But a public utility company can neither sell nor lease its property used for the public without legislative authority. See *Central Transportation Co. vs. Pullman Palace Car Co.*, 39 U. S. 24, in which there is an elaborate and learned discussion by Mr. Justice Gray. It cannot abandon its public duties. *Atty. Gen. vs. Haverhill Gas Light Co.*, 215 Mass. 394.

Nor is the familiar rule that "every public grant . . . of privileges or franchise, if ambiguous, is to be construed against the grantee and in favor of the public" (139 U. S. p. 24) to be overlooked when determining the question as to whether the property of a public utility entitled to a return, includes merely the investments made for the public benefit, or other property from public grants, unearned increment derived from excess earnings.

The rate decisions of the Supreme Court which have made us trouble are not based upon the constitutional prohibition that no state shall pass a law impairing the obligation of contracts, they are all based upon the provision that states shall not deprive persons of their property without due process of law.

The fallacy in this reasoning seems to me to lie in the assumption that security holders of a public utility company have a property right to draw from rate payers a return upon something the security holders have never furnished. They furnished money,—capital; nothing else, except management.

There is a vital distinction between the property right that a public utility company has in its lands when they are taken from it by right of eminent domain and the property right that a corporation has in being entitled to levy such rates as shall not deprive the security holders of what the security holders furnished to the corporation for the public convenience. Failure to realize and enforce this distinction is the chief source of our present troubles. Of course, if nation, state or town deeds land to a public utility company, the company owns the land and can collect its full value if the land is taken away. Yet, until the government by

¹ (Compare Cooley's *Constitutional Limitations*, page 391 and cases.)

such taking waives its right in such property derived from its original devotion to the public service, the owners thereof have but a limited and qualified property right in it. The right to charge rates upon the value of such donated land, if it exists at all, must grow out of the franchise,—an express or implied contract, the burden of showing which is upon the corporation and not upon the donor of the gifts. No such right can be deduced from the mere fact of the gift,—rather the contrary; and “unearned increment” is social property—a gift.

In proper perspective, it is a strange doctrine that American communities cannot make gifts to their public utility companies without thereafter, in perpetuity, being taxed upon the assumed increasing value of these gifts. Yet this is probably the practical effect of the decision of the Court in the Minnesota Rate Case, 230 U. S., as to railroads which were brought into existence largely, if not wholly, because of enormous gifts of public property made to their promoters. Can any one doubt that if at the time of the chartering of the railroads, whose rates were reviewed in the Minnesota Rate Cases, the charters had provided that reasonable rates should be deemed such rates as would make a fair return only upon the amount of capital put into the enterprise by the security holders, and excluding all capital derived from public gifts,—the Supreme Court would have held such a charter valid?

But unless such a charter as this is, *ab initio*, unconstitutional, then the real constitutional question as to the rates of existing utilities is, whether there is anything in the history of the relations of the investors in these utilities to the chartering government, which now prevents the court from saying that the return shall be calculated only upon the actual investment made for the public benefit. I find no case which leads me to think that the Supreme Court will hold unconstitutional as confiscatory a legislative enactment, to the effect that only capital honestly and prudently invested shall, under normal conditions, be taken as the basis of calculating a return in order to fix fair and reasonable rates.

Put otherwise: The community that asks for and obtains privately capitalized and managed public utilities, *hires* money and management as truly as if it borrowed the money and employed the managers on salaries. The two contrasted systems of public ownership or private management, plus private control, are distinguished only in minor matters and in degree. (Cf. *Chi. etc. Ry. Co. vs. Minn.*, 134 U. S. 418, 461.) It is merely a question of which method will give us the safest, cheapest, best and most progressively managed utilities. We may pay more in percentage for private money than if borrowed on public credit. We

may stand for higher salaries to managers of privately owned public utilities. But the basis of the rates is the same: We must pay for what we get,—money and management. Of course in the payment for money may be included risk of loss; if we refuse to pay for that we shall not get the money. That is, we must allow rates that will put and keep our utilities in good credit. But there is no obligation in ethics or in business policy to pay for something that is not furnished. But there is obligation to pay for what is furnished; and the reproduction cost theory, logically applied, throws unfair risks and losses upon the investors and tends to discourage the promotion of new and needed public utilities. Most new utilities have a period, pending the building up of the business, when the reproduction cost is much less than the honest and reasonably prudent investment. Are their rates to be cut to this basis—thus throwing the loss permanently on the investors? Or, rather, do sound policy and fair dealing both require that the investors in a needed and finally succeeding utility have their money all back with a fair return?

Moreover, this reproduction-cost-theory deals only with the ephemeral—the conditions of the fleeting moment; the relations between investing public and rate paying public are of the permanent and fundamental kind. Our utility companies are not finished. They are in process,—constantly calling for new capital. They must be kept on good trading terms with the investing public, or the whole experiment of private ownership and public regulation of public utilities will fail. Obsolescence and other forms of depreciation are, broadly speaking, not burdens of the investor; the rate-payer must bear them. Within the limits of sound management and the ordinary risks of the enterprise, investors must be protected or the community will go without, or pay a high price for, capital for its utilities.

Moreover, if reproduction-cost is the test, the investors will shortly be shocked to find it will be reproduction of *equivalent service*, not of the identical plant with its frequently undesirable location and obsolescent or partially obsolescent appliances. Who would today locate Boston's Railroad terminals where they now are? What was the reproduction value of horse railways when the success of the trolleys became certain? The experience of the New Haven Railroad in attempting to market the abandoned Park Square terminal site, shows how ridiculous the claims for land values are. At the end of seventeen years the New Haven has not been able to sell it, and carrying cost and taxes must have wiped out the book value of more than \$5,000,000.

Unless we adopt and maintain as a fundamentally guiding principle the duty and policy of protecting

investments honestly and prudently made and wisely managed, we make our regulation a fraud or a farce.

Of course I am arguing only for a *fundamental and guiding principle*. Rate making is too complex and difficult a problem to be capable of solution by any absolute or mathematical test. Competition will sometimes make a fair return on capital invested impossible. In other cases an exceedingly generous return must be allowed on a fortunately situated utility, like the Lake Shore Railroad,—else its rates will be so low as to give it an undue portion of the business and thus destroy needed competing lines.

There is, there can be, no answer to the proposition so ably urged by Commissioner Thelan and Professor Gray that the essence of sound relations between public and public utility is that of principal and agent. No other theory is honest or workable or permanent.

Nor am I able to accept the doctrine which Chairman Stevens of the New York Up-state Commission has set forth in several opinions, practically to the effect that every rate determination is on final analysis nothing but a personal judgment of what is fair. This amounts to saying that rate making is the output of "a government of men and not a government of laws." Apart from the grave doubt one feels as to whether the legislature may constitutionally delegate such arbitrary power, such actual or assumed delegation makes the position of a commission altogether too powerful for believers in a democratic "government of laws" to tolerate. It is quite practicable to lay down a fundamental guiding *principle*, flexible enough so that the administrative commission may deal with the exceptional case, and controlling enough so that investors and rate-payers may fairly understand the essence of their interrelations.

But my suggestion that the way to get out of the slough into which we have been plunged by the Supreme Court's rulings, or more accurately its dicta,—is through legislation,—is not without support in actual experience.

In Massachusetts we have, or think we have, full and adequate legislation as to the basis upon which rates are to be reckoned. At any rate in the Middlesex and Boston Rate Case, decided by the Public Service Commission of Massachusetts on October 28, 1914,—the first important rate case decided by that Commission under the new and adequate powers given by statute of 1913, Ch. 784, the Commission rules, "Under Massachusetts law capital honestly and prudently invested must, under normal conditions, be taken as the controlling factor in fixing the basis for computing fair and reasonable rates; that if there is mismanagement caus-

ing loss, such loss must be charged against the stockholders legally responsible for the mismanagement."¹

It fell to my lot to write that opinion. But the doctrine then laid down was, as the opinion sets forth, nothing new in the theory of Massachusetts rate regulation. For nearly a century Massachusetts law has gone upon the theory that the capitalization of public utility companies should be limited to the actual capital invested, and that rates must be figured for a fair return upon the capitalization.

These Massachusetts enactments relative to the basis of rates are either constitutional or unconstitutional. They have never been held unconstitutional. Our utility managers and their counsel urge the reproduction-cost theory in their rate cases when representing excessively prosperous companies like some of our gas companies. But so far no case involving the question of the validity of the Massachusetts code has ever reached the Supreme Court of the United States. In my confident belief, if and when the validity of our legislation does come before the Supreme Court, it will be held constitutional.

My statement of Massachusetts law, embodied in the ruling in the Middlesex and Boston Rate Case, above quoted, is based, as the opinion will show, upon the fair and necessary inference from a long course of Massachusetts legislation relative to the capital and rates of public service corporations.

But there is no great difficulty in inserting, both in the interstate commerce act and in the acts of the various states, dealing with rate making, a substantially equivalent provision, presenting the constitutional question in narrow compass. All these acts contain provisions to the effect that the utility may make "charges which shall be just and reasonable." (See Interstate Commerce Act, Sec.1.) Most of them also contain provisions authorizing the regulating commission, on its own motion or by complaint, to determine what rates are "just, fair and reasonable to be thereafter followed." Others fix simply maximum rates. Interstate Commerce Act, Sec. 15.

In our Massachusetts Public Service Act,—Acts of 1913, Ch. 784, Sec. 22,—is a careful provision authorizing the Commission after hearing, either upon its own motion or upon complaint, to deal with rates, whether unjust and discriminatory or unduly preferential from the standpoint of the rate-payer, or whether from the standpoint of the carrier "insufficient to yield a reasonable compensation for the service rendered." The ruling made in the Middlesex and Boston Rate Case, *supra*, as an inference from various statutes may easily be put into a distinct single enactment, as follows:

¹ 2 P. S. C. (Mass.) 111, 112.

"The Commission shall, for the purpose of determining whether the aggregate return derived from rates, fares and charges is sufficient to yield a reasonable compensation for the service rendered by any public utility, take as the controlling factor under normal conditions for computing the basis of such rates the amount of cash capital paid into the treasury of such utility company for securities lawfully issued,—provided that the proceeds of such securities shall have been used honestly and with reasonable prudence in providing the facilities of such utility."

I do not say such a statute would cover every rate case and reduce it to a single question of computing a 5 per cent or 6 per cent rate on an investment shown clearly and accurately in the bookkeeping. But this is the sound principle; the ideal to which rate regulation should tend. It is honest and easily understood. It may be simply and cheaply administered; for which reason many experts and lawyers will disapprove it.

Lest I be misunderstood, I repeat: not for a moment do I cherish the delusion that rate making can be reduced to a simple problem in percentage. Even if we have the proper standard—the guiding principle—for which I argue, rate making is still a complicated and difficult problem, an accurate and entirely satisfactory solution of which will, in very many cases, be found entirely impossible. This would be true even if all our corporations had been originally capitalized honestly and with reasonable prudence, and if the subsequent bookkeeping were substantially accurate. In fact, as everyone knows, very few of our public utilities were well born and well brought up. Their financial history is as chaotic and hard to follow or understand as the political history of the Balkan States.

It is quite possible that the federal valuation now under way may be found a necessary condition precedent to the establishment of any standard from which to start for an orderly future. In view of the enormous expense of this valuation, I hope it may serve this useful purpose. I can conceive of no other respect in which it is likely to be of substantial value. Unless from the final results are eliminated practically all elements of the reproduction—cost theory, the money spent in this enterprise will be worse than wasted.

Again, I concede that in making rates *some* consideration must be given to the amount of securities that have been issued and sold to the investing public. Such situations as the Supreme Court found in the New York Gas Case, where several millions of capital had been issued for the franchise with the apparent approval of the State of New York, cannot be totally disregarded by the rate making tribunal. We can neither accept the proposition that rates are to be based upon securities issued, nor, in all cases, arbitrarily assert that no consideration whatever shall be given

to the *bona fide* holders of securities, only a small part of the proceeds of which may have been used for the public benefit. Situations may arise in which the community is morally estopped to assert its full right to have rates based only upon the honest and reasonably prudent investment.

But what I am now arguing for is not a rate making code, it is for a rate making principle. I would set a standard. I would have agreement upon the fundamental basis.

My proposition is that the reproduction-cost standard is, in essence and in nearly all its necessary applications, fallacious, dishonest, unstable, impossible of speedy and efficient application, and tends to destroy just and harmonious relations between investing public and rate paying public; that, on the other hand, the honest-and-reasonably-prudent-investment standard is in essence and in most of its applications, sound, honest, stable, capable of speedy and efficient application and tends to establish and maintain just and harmonious relations between investing public and rate paying public.

If it is suggested that the investment theory logically involves the necessity of governmental control both of original and supplementary security issues by the Interstate Commerce Commission, I answer that that is far from being an adequate reason for rejecting the theory. Indeed, it may be an additional argument for the theory. That is, however, too large a subject now even to touch upon.

But the present condition of chaotic conflict between legislative and judicial powers, between commission-made rates and judicial review thereof, is intolerable. Some relief must be found. In Massachusetts we are now in this dilemma: If we enforce our Massachusetts law, as we did in the Middlesex and Boston Rate Case, we protect investments made in the depreciated trolley properties, a considerable part of which under the reproduction-cost theory would have to be held to be finally and irretrievably lost to the stockholders. Naturally, therefore, the unprosperous trolley companies regard the investment theory as the bulwark of their liberties and sing pæans to its supporters. But the overprosperous Gas Companies, with surpluses derived from decades of extortionate rates, whenever a reduction is suggested, cry—"Confiscation," denounce us as thieves and robbers, and threaten the regulating commission with court injunctions. We must therefore pay more to the unprosperous trolleys because hitherto we have (probably) paid too little to them; and more to the overprosperous gas companies because we have hitherto paid them too much. "Coming and going," the public pays.

If the genesis of the reproduction-cost theory is as I

have indicated; if my thinking is even approximately correct, the way to get the desired exodus of this congeries of absurd, unjust and inconsistent fallacies is to promote legislation—national and state—declaring that a fair return shall, under normal conditions, be reckoned upon the capital furnished for the utility, and only upon that.

To make the fight only in the courts is to waste our energies and to admit that on matters purely legislative we are, nevertheless, a court-governed people.

When should we have had a tolerable system of dealing with industrial accidents if we had struggled to induce the courts to overrule the doctrines of "fellow-servant," "assumption-of-risk," and "due-care on the plaintiff," instead of going to the legislatures for compensation acts?

The judge-made rate law is as bad as the judge-made accident law. Both grew mainly out of legislative inadequacy and not out of judicial usurpation. Let the legislatures now take up and finish their half-done work!

ORIGINAL COST AS THE CHIEF BASIS FOR FAIR VALUE

BY EDWARD W. BEMIS

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A COMPREHENSIVE statement of this big subject is out of the question in a short paper, but if a few points can be brought out clearly, the writer's object will have been attained.

If a fair rate for gas is sought in Boston or Baltimore, we may find a rate that will give a fair return on any investment put into the property by the stockholders or bondholders, or even furnished, it may be, from surplus. We may also discover that early development costs have been paid back by later profits. But we are suddenly halted. We are told that, thanks to railroad or harbor improvements, which may even cheapen the cost of materials for the manufacturer, land in the neighborhood has risen in value, and that the price of gas cannot be reduced, lest 6 per cent to 8 per cent be not earned on this unearned increase in the value of land.

A few sky-scrapers go up between the Grand Central and the Pennsylvania stations, in New York, enhancing the site value of those depots. In consequence, the freight and passenger rates from New York to San Francisco must be raised, or reductions otherwise possible must be denied, in order that the New York Central and the Pennsylvania may earn on the increased value of their terminals.

Such is the outcome of the reproduction cost in its relation to fair value. If this theory be carried out in its logical fullness, the valuation of railroads which is now being made will so much exceed their actual cost as to justify increases of rates that will startle the country.

By original cost in the case of physical assets is meant the actual cost of the property now in use. In reproduction cost we attempt to determine the present day cost of replacing the existing property, if it were sud-

denly removed or destroyed. In both cases, depreciation, or the estimated decline in units of service, from wear, obsolescence, inadequacy, or any other causes, is equally to be considered. Estimates also are necessary, in both lines of investigation, but with the important difference that reproduction cost is all an estimate, based on current prices of labor and materials, while the original cost is only partly based on estimates, worked out from a knowledge of prices of labor and materials at different periods in the past when the property was built. In considerable degree—and in some cases in almost its entirety—the actual cost can be found in the books, vouchers, and other records of the company.

BLOWS AT REPRODUCTION COST

Both actual and reproductive cost may well be determined as checks upon each other, and to justify the demands of many courts and commissions. The tendency, however, to rely only upon reproduction cost has of late received many a deserved blow. In the first place, many engineers have repudiated present prices on fluctuating commodities, and have begun taking five-year averages. The justification of this was not that we thus can secure present day cost, which would be a false claim, but that we secure a fairer basis for rate making, and even for purchase.

Then the Wisconsin Commission and other commissions, and also the courts, quite generally have refused to include in reproduction cost the expenses that would be incurred in cutting through and restoring paving over mains and conduits where such paving was put in by a city after the mains were first laid. This eminently fair treatment of the case has proven a severe blow to the reproductive theory.

Another blow was delivered by the United States Supreme Court in the Minnesota Rate Cases, when the value of adjoining land was taken as the criterion of the value of a railroad right of way, without any addition for severance damages, plottage values, holdup charges, cost of acquisition, interest and taxes during construction of the improvements on land, etc.

Although Mr. Pierce Butler seeks to explain the decision as due to defects in the evidence offered by carriers, equally thorough students of the case hold that the Court intended to allow to the railroad much less than the cost of reproducing its right of way today, even though the evidence of what that would be were convincingly presented.

It seems likely that the United States Supreme Court, while not yet ready to accept the actual cost of a property as the chief factor in a rate case, is nevertheless so worried over the result of giving a road that the reproductive theory would logically call for, that it is using the present value of adjoining property—which may not exceed half the reproduction cost, although perhaps on the average, much over twice the actual cost,—as a compromise measure.

It is not only in the case of land that the original cost theory is gaining increasing recognition as a basis for fair value, but in the case of all other physical properties it is recognized that most of our utilities were built when prices of labor and materials were lower than now, and under conditions of piecemeal construction which required less overhead charges of all kinds than now would be required under wholesale reconstruction in a short space of time.

A fourth blow has been struck at the reproduction theory in the recommendation of the now famous Valuation Commission of the American Society of Civil Engineers, that reproduction cost should be estimated under original conditions of topography, such as forest growths, soils, and quantities of grading, rather than under the natural conditions that would today confront an actual reproduction, if we could assume the utility suddenly blotted out and the present day configuration and character of the adjacent land to be extended over the site of the roadbed.

If the engineer is to become also the accountant and economist, and to try to patch up the reproduction theory by considerations foreign to it, this assumed restoration of original topography may introduce some elements of fairness, but it is no longer the logical reproduction theory.

In still a fifth way the reproduction theory has been hard hit, and original cost adopted in its place, *viz.*, the determination of going value by the Wisconsin Railroad Commission and by the New York State Court of Appeals. Instead of basing going value upon the

cost of reproducing the business, as do Alvord, Metcalf, and others, following the logic of the reproduction method, the Wisconsin and New York authorities above mentioned adopt the purely historical theory of early deficits not made up by later profits. Indeed, the justification of an allowance for going value on the reproduction method, by any court or state commission outside of New Jersey, would be hard to find.

In its able, though not conclusive, opinion on going value, the New York Court of Appeals not only discards the reproduction theory in the direct computation of going value, but it bases its conclusions relative to possible early deficits on the actual original cost instead of on the reproduction cost of the physical property itself. In this case (*Kings County Lighting Co. vs. Willcox*, decided March 24, 1914) the actual investment or cost of the property, less depreciation, and not the estimated reproduction cost, was used as the basis on which earnings were to be computed in determining whether the company had obtained such a reasonable return as to have lost any claim for going value. It is thus expressed in the syllabus:

“The public service commission in fixing the rates of a public service corporation, must allow the corporation a fair return on its investment, on the value of the property used by it in the public service, and in determining such value, it must consider as a separate item, apart from the physical property, the ‘Going value’ on the business, if any, which is, for rate purposes, ‘the amount equal to the deficiency of net earnings below a fair return on the actual investment, due solely to the time and expenditures reasonably necessary and proper to the development of the business and property to its present stage, and not comprised in the valuation of the physical property,’ and whether there is such a deficiency or ‘going value’ is a question of fact, the determination of which is primarily for the rate-making body, but an advisable method to determine such fact is to consider the actual experience of the company, the original investment, its earnings from the start, the time actually required and expenditures not reflected by the present condition of the physical property, the extent to which bad management or other causes prevented or depleted earnings,” etc.

In other words, the “actual experience of the company or original investment” is the basis for all studies of a fair return and for the determination of whether the company has an equitable claim against the public to make up early losses under the term “going value.”

ACTUAL COST IS USUALLY JUST

Actual cost appeals to one's sense of justice and fair dealing and leads to security of investment, more than does the reproduction cost. This is easily seen in the case of falling prices, such as have often prevailed for long periods of time, as, for example, in this country

prior to 1896. In the case of rising prices, the investor's judgment may be clouded by personal gain attaching to the acceptance of the reproduction theory. Was it not Macaulay who said that many would deny that two and two make four, if there were profit in so doing?

Suppose, however, that prices were steadily falling, as prior to 1896; and suppose that property costing \$1,000,000, in a public utility, could be duplicated later for \$800,000. How many investors who now champion the reproduction theory of valuation would adhere to it when it meant a scaling down of their original investment by the decline in the price level, independent of any form of depreciation in the property itself? The question carries its own answer.

Let us note some evidence of the growing revolt against the dominance of the reproduction theory. The papers read at this and last year's conference should be first noted:

THE AGENCY THEORY

The recent Secretary of the Interior, Walter L. Fisher, a prominent Chicago attorney, endorsed the cost theory with respect to railroads when he accepted the theory that the railroads occupy a trust relation toward the people; for a trustee must return the actual investment committed to his care and cannot keep the increments that might come to him while in his charge. Mr. Fisher gives his views on this trust relation in his report on Alaskan Coal Problems,¹ and quotes with approval some court decisions as follows:

"The Supreme Court of the United States said in *United States vs. Joint Tariff Association* (181 U. S., 505-570): 'The business of a railroad carrier is of a public nature, and in performing it the carrier is also performing, to a certain extent, a function of government.' In *Talcott vs. Pine Grove* (23 Federal Cases, 652), the United States Circuit Court for the Western Division of Michigan said that railway corporations 'exercise delegated sovereign rights' and are 'but a portion of the public government. . . . And it is not true, we submit, that it is in degree only that these franchises differ in their relations to the public from mills and inns, as is said in *People vs. Salem*. The one is private property; the other is a political function, which, when resting in the hands of government where originally it resided, or delegated still for the same public use, to either persons or corporations, ever has been, and of right may be, aided by taxation. . . . It is for the performance and regulation of this old and familiar governmental duty, in a mode deemed by the legislature most efficient and economical, that in modern times railway and other corporations have been created. And in the most plenary and critical sense, under the general railroad law of Michigan, they are parts of the political organism. The road, once constructed, is, instant and by mere force of the grant and law, embodied in the governmental agencies of the state and dedicated to pub-

lic use. All and singular its cars, engines, rights of ways, and property of every description, real, personal, and mixed, are but a trust fund for the political power, like the functions of a public office.' "

The agency theory, with its insistence upon the supreme importance of original cost, has been accepted in its entirety by Brooks Adams, the well known Boston authority, in his brief, in 1910, for the Railroad Commission of the State of Washington on Railways as Public Agents (printed by the Plympton Press, [Norwood, Mass.]).

Mr. H. P. Gillette has fully accepted the agency, or cost, theory with respect to future construction. He has written (*Railroad Gazette*, January 10, 1913, page 56):

"It seems to the writer inevitable that the agency theory will eventually be adopted in its entirety for appraisals of public service property created in the future. In other words, the actual cost of the property including the accumulated deficits in fair return will be rate making value. Even increments in land value will be reported as profits, that is, as part of the fair return."

His reason for not applying this just rule to present value will not be convincing to all. He puts it thus:

"When a newly evolved code of morals made it reprehensible to own slaves, there were men who advocated freeing the slaves without giving compensation to the owners. It would have been more just had the general public been taxed to purchase freedom for the slaves, and it would also have been more economic than the war that made them free."

Perhaps a better illustration may be taken from taxation. As we gradually educate the public to more just theories of taxation, or to a different treatment of the saloon question, from that previously prevailing we change our system of taxation, or of sumptuary legislation, without any compensation to the large property owners thereby injured, while the general public welfare is increased. The time probably will come when the long process of education as to the equity of actual or estimated cost will bring its general adoption as the preponderating, although not usually the only factor in fair value.

ESTIMATES OF ORIGINAL COST

Mr. Hammond V. Hayes, formerly Chief Engineer of the American Telephone Company, has endorsed the importance and practicability of ascertaining and using actual original cost. On this point may be quoted the following from his recent volume on Public Utilities, *Their Fair Present Value and Return* (page 126-8):

"The age of each unit of perishable property must be ascertained in every valuation for the purpose of determining the loss in value of the unit due to depreciation. The present

¹Department of the Interior, Bureau of Mines, Bulletin 36, 1911.

value of the items of perishable property, whether that value is based on original cost or replacement cost, is the cost-new-less-depreciation. The present value of the property as a whole is the value of the perishable property in its present condition plus the value of the non-perishable property. With the ages of all units known, it is only necessary to group together units of the same kind and age. The age indicates directly the year in which the units were purchased. The price paid for each unit in each year in the past can be obtained readily from the books of the company, or if such records are not available, it rarely would be difficult to obtain reliable figures from outside sources. The product of the unit cost for each year, obtained in this manner, multiplied by the number of units found by a knowledge of their age to have been installed in that year, gives the costs for each year of the perishable property. The sum of the costs of all units for all years gives the total actual original cost of all perishable property. To this sum must be added the actual cost of the non-perishable physical property. . . .

"These unit costs are actual costs, whereas the unit costs used in a determination of the replacement cost are based theoretically upon the assumption that all material and labor must be figured at the prices prevailing on a particular day, and that such prices should be not the actual prices but what they would be if the market were normal. Original cost, being actual cost, avoids the contentious question usually incident to replacement cost—whether such a figure should show the cost of plant replaced in a wholesale or in a piecemeal manner. There are many other similar points favoring the reliability of a figure representative of actual original cost, derived as described above, which are of interest to the expert on valuation but need not be considered here. Every consideration tends to show that the actual cost of an existing plant is a more acceptable figure, as far as the accuracy of its determination is concerned, than a figure based upon the supposititious replacement of a plant. All doubt as to the reliability of the books of the company is removed, as the inventory establishes the present useful items of property and their ages. The books of the company can be trusted to show what was paid for labor and material and, even if this is doubted, market rates for labor and material for the years in question can be obtained from other sources.

"It must be distinctly understood that the above arguments in favor of actual original cost are not intended to advocate the use of that figure to the exclusion of the replacement cost. On the contrary, figures to show the replacement cost have been demanded by the courts and must be prepared and presented to the rate making tribunal, for its information. The point it is wished here to emphasize is simply that the actual original cost is likewise a figure of importance and is one which has been greatly neglected in the past. The actual original cost is capable of determination with quite as great a degree of accuracy as the replacement cost and can be accepted in many cases with less controversy."

THE REPRODUCTION THEORY IN BUFFALO

Mr. Frederick P. Stearns, chairman of the Valuation Committee of the American Society of Civil Engineers, endorses both the importance of original cost and the practicability of estimating it where the records are missing.

The recent able chairman of the Public Service Commission of New York, Second District, Mr. Frank W. Stevens, in his epoch making decision in the Buffalo Gas Company case, February 4, 1913, which everyone connected with valuation work should read, exposes the weaknesses of the reproduction theory in a most startling manner. After making some estimates of reproduction cost of manufacturing apparatus, he says:

"These findings as to reproduction costs are subject to the same criticism as that upon the reproduction cost of street mains hereinafter discussed, namely, that the unit prices are of such a character that no particular sum within a range of 25 per cent can be called more than a guess."

Pertaining to the prices of cast iron pipe, he says that the prices per ton in Buffalo have not only fluctuated violently from year to year but that even the average of five-year periods has also greatly fluctuated, as shown in the following table:

1893-97	1898-1902	1903-07	1908-12
\$20.59	\$24.89	\$31.48	\$24.02

This alone would make a variation in the appraisal of the price of pipe as follows:

1893-97	1898-1902	1903-07	1908-12
\$617,700	\$746,700	\$944,400	\$720,600

Two able engineers produced by the Buffalo Gas Company differed 52 per cent with respect to the cost of labor and accessories in pipe laid, 104 per cent in the cost of rock excavation and 143 per cent in the cost of interest, engineering, and inspection. A difference between these two engineers in the cost for labor and accessories in laying mains in ordinary soil and through rock in the streets of Buffalo would mean a total variation of price of 3.15 cents per thousand feet of gas, if the company be entitled to 6 per cent on the difference in the two valuations. Mr. Stevens goes on to show how unit prices differ widely in different cities and in the experience of different engineers, and says after an exhaustive investigation:

"We have gone at some length into the question of unit prices because of its tremendous importance in the valuation of property upon the theory of reproduction cost. We have shown how with the enormous quantities involved in large properties small variations in unit prices will make large differences in aggregate results, which must affect mater-

ially and very seriously the price to the public and the return to the company. The theory of reproduction cost as to the value of the property is not one to be depended upon. However correct or incorrect in theory reproduction cost as representing the value of an existing property may be, it obviously can not be used so as to produce a result which is just and reasonable unless both the quantities and unit prices are reasonably satisfactory. In the case of many articles, unit prices are easily ascertainable. In the case of many other articles, and in the case of labor costs, as is shown above, they are extremely uncertain and produce results which are so discordant as to be amazing. . . .

"All of the engineers whose estimates are given are straightforward, competent men, and they had a right to rely upon their experiences. Their experiences have varied, and what the experience would be in re-laying 411 miles of pipe in the city of Buffalo under various conditions of traffic, soil, and obstructions under the surface of the soil, no man knows or can know within a variation of hundreds of thousands of dollars. For these reasons, the Commission is unable to find definitely what the fair and reasonable reproduction cost of these mains would be."

In a later case, decided April 2, 1913, by the same public service commission of the Second District, being the case of the *City of Buffalo vs. The Cataract Power and Conduit Company*, the matter was taken up still further and this conclusion was reached:

"Without prolonging the discussion, the conclusion of the Commission is that in this case the fair value of the property used in the public service, or what is equivalent thereto, the fair amount of the investment upon which the return should be computed, may be better ascertained by giving the greater weight to the actual cost as the basis of the inquiry than in any other way. This actual cost may require diminution if it should be found that the expenditures were extravagant or wasteful. It may require increase if it be found that any of the property has actually increased in value since it was brought into the public service, and it may require increase for other reasons. It is not assumed that the actual amount of money expended by the company and placed upon its books as the cost of the property is the fair value. It is, however, assumed that such cost taken as the chief basis of investigation will lead to more just and equitable results than any other one basis which is afforded by the evidence in the case."

GRAY ON ORIGINAL COST

Prof. John H. Gray, late President of the American Economic Association, in his address at its annual meeting in Minneapolis in December, 1913 (reprinted from the proceedings of the twenty-sixth annual meeting), strongly endorses original cost as by far the most important element in the valuation of property in rate cases. Referring to how the Burlington road claimed that, although its property had cost its stock and bond holders only \$258,000,000, it now had on the reproduction theory a value of \$530,000,000 due to an in-

crease of \$150,000,000 in land values and \$122,000,000 in property acquired in earnings (Western Advance Rate Case, 20 I. C. C. R. page 332), Professor Gray comments as follows:

"To state the case in another way, does anybody suppose that if the state had built this road itself, as it had both a moral and legal right to do, the public would ever have seriously considered the raising of the rates on this road to provide an income on value thus created from either surplus earnings or from the increase in land values caused by social progress? Yet this increase is the logical outcome of the route we have been traveling. Cannot anyone see clearly that to continue on this road is to give the utilities all the chance for speculative gains that exists in purely private business, at the same time that we, in fact, under the theory of regulated monopoly and the capitalizing of losses, insure them against all losses in case the venture proves unprofitable? In short, we have arrived, from the standpoint of the companies, at the happy maxim of 'Heads, I win; tails, you lose.'

"To resume briefly: When the public first began to realize the importance of the utilities to the public welfare (more particularly after the Supreme Court declared the industries 'affected with a public interest' in 1876), the public desire centered about the attempt to prevent the companies from earning dividends on watered stock. In attempts to carry out this public desire, the courts invented the theory of fair value of property. This necessitated a valuation of the property. The courts in this situation sympathizing with property rights and vested interests, and innocent of economic learning and without proper facilities for making scientific investigation, and, also, finding themselves overloaded with work, permitted the companies to foist upon them the false theory of cost of reproducing the property and business and thus caused the emphasis to be thrown on rates rather than on capitalization.

"While it is true that the courts have never laid down a rule as to the part that cost of reproduction should play in valuation, such theories, as I have already shown, occupy nearly all the evidence in the cases, and constitute the bulk of all the arguments of the attorneys for the companies. Beyond doubt, they have, in fact, so far been given overwhelming influence in the decisions. The only hope at this point is that the courts, having never laid down any rule, and, consequently, never having revealed the working of their minds, have left the gate wide open for a graceful retreat as soon as they wake up and realize what their practices have led to. There is no hope through regulation till there is such a reversal, in fact, if not in form. Unless such a change is speedily brought about, we are sure to move rapidly towards public ownership and operation,—a condition for which our traditions and form of government are at present ill adapted."

SOME DECISIONS FAVORABLE TO ORIGINAL COST

The New Brunswick Board of Commissioners of Public Utilities in its decision of April 22, 1914, with respect to the Eastern Electric & Development Com-

pany favors original cost. In discussing the two appraisals submitted in this case, the Board said:

"Both are made up by taking the present replacement cost and deducting certain percentages for depreciation. We are by no means satisfied with the replacement cost as a trustworthy guide. It is a difficult standard to apply, even when there has been no marked difference in construction cost, between the time or times when the plant was installed and the time when the estimate of replacement cost was made.

"Before the advance in cost of labor and materials replacement cost was usually less than the actual cost of building up a plant, principally because it would be cheaper to install a complete equipment under one contract than it actually was to build it up piecemeal, and then it was common for consumers and the public generally to insist that the replacement cost was the only proper basis for rate making; but in many cases this would work manifest injustice to those public utility companies which had expended their money prudently and wisely and as occasion required to meet all reasonable calls for service, thereby necessarily expending more than if they had put in the whole equipment at once. We think that if that standard had been rigidly followed, it would have driven public utility corporations to erect plants far in advance of their requirements, and to have invested large amounts of capital in plants which must have lain idle, and would have deteriorated without being in a position to earn money. The public would certainly have objected to rates which would have enabled a company to earn a reasonable return upon such premature development, so that either way the public utility company would have been likely to suffer an injustice.

"But now conditions are changed; owing to the greatly increased construction cost, the replacement value instead of being less is more than the amounts actually expended in establishing plants (except, of course, those built up very recently), and now the public utility companies insist that the present replacement cost with a reasonable allowance for depreciation should be the basis upon which rates should be fixed while the consumers object.

"We have thought it well to state at some length the opinion of the Board as to replacement cost as a standard. In our view it is not only a difficult one to apply, as was said above, but owing to the fluctuations in cost above referred to, it is not only a difficult but an uncertain standard. For these reasons we do not look upon either of these appraisals as particularly useful in assisting the Board to arrive at a just conclusion as to the present value or actual cost of this plant"

The New Hampshire Public Service Commission has placed the chief emphasis on original investment or cost in the Berlin Electric Light Company Case reported August 31, 1915. It merely qualifies its endorsement by recognizing first, as do all believers in the cost theory, that we must also take into account whether the property was well conceived and well managed and whether it has been reasonably profitable.

The Massachusetts Public Service Commission has adopted the cost theory of valuation. In the Middlesex and Boston Rate Case, decided October 28, 1914, with respect to rates of fare upon a street railway, the Commission held:

"If regulation is to limit (as it should) the profits of stockholders to a moderate return, not greatly in excess of an investment rate, regulation must also protect, so far as it reasonably may, all investments honestly and prudently made and properly managed in the public service; otherwise there will be no such investments. It is entirely clear that in the long run the rate paying public as well as the investing public will be best served if regulation makes as its fundamentally guiding principle an attempt to protect investments honestly and prudently made and wisely managed. Any other theory involves essential injustice, tends to make the development of our public utility companies a speculation and not an investment, operates as a premium upon various kinds of fraud; invites into the public service undesirable manipulators instead of sound, level-headed business managers; makes every rate case an almost interminable and labyrinthine inquiry into values with endless conflicts between so-called experts."

The Public Service Commission of the First District has in several decisions recognized the importance of securing the actual cost of the property; for example, in the Kings County Lighting Case (2 P. S. C. 1st District, N. Y., pages 680-1) the Commission states that the New York law requires the Commission in determining gas and electric rates to—

"consider all facts which in its judgment have any bearing upon a proper determination of the question with due regard among other things to a reasonable average return upon capital actually expended."

The Commission, however, properly recognized that depreciation in all its forms must be deducted from the actual original cost as well as from any estimated reproduction cost, under the following clear statement in this respect:

"the mere fact of investment does not establish a perpetual value not only because a mistake in judgment may be made, but also because property may be allowed to deteriorate, because progress in the arts may make it obsolete, and because a change in economic conditions may decrease the use made of it by the public. . . . To assert that because a company at one time put money into property which has become useless, worn-out and obsolete, a successor company which purchased that property at a foreclosure sale should be allowed to capitalize for the amount originally expended is so absurd as not to require further discussion. Investment may be evidence of the good intentions of the investor, but it is not an infallible standard of perpetual value."

In this connection it may be observed that railroad attorneys, with their usual insistence on technicalities,

are claiming that under the Valuation Act the Interstate Commerce Commission cannot set up estimated depreciation on the actual cost of the property, but only on its reproduction cost. This view, absurd from the engineer's and the economist's standpoint, and entirely contrary to the intention of Senator LaFollette and others responsible for the bill, is based upon a clause in the act wherein the Commission is ordered to report "the original cost to date, the cost of reproduction new, the cost of reproduction less depreciation," without any special reference to depreciation on original cost.

Fortunately the act further provides that "in ascertaining the original cost to date of the property of such common carrier, the Commission, in addition to such other elements as it may deem necessary, shall" etc., thus implying the right to use any elements deemed necessary for determining original cost. Again, "The Commission shall have power to prescribe the method of procedure to be followed in the method of investigation," thus implying the use of any suitable methods. This language, it is believed, will fully justify the application to the actual cost of the property now in use, the same percentage of depreciation that the engineers apply to the estimated reproduction cost of the same property. But this matter is yet to be determined by the Commission.

The oldest of our State commissions—the Massachusetts Gas and Electric Light Commission—has always sought to base a fair value for rates on capitalization, and to restrict capitalization to that part only of the cost that has been borne by direct contributions of the stockholders and bondholders. The propriety of this further step, successfully maintained in the recent Haverhill Gas Case, is not now under discussion, but is mentioned here only as it is based on the acceptance of original cost as all important.

It is natural that railroad and public utility attorneys should adopt the theory of reproduction cost, which fully applied, is their only way of securing the many enormously valuable unearned increments for which they contend. How far the believers in the justice of original cost will be able to impress their point of view upon the valuation now under way of our railroad,

telegraph, long distance telephone, and interstate electric railways and power companies, will depend to a large extent upon the attitude and efforts of those in attendance at this Conference.

BIG ISSUES AT STAKE

Little does the country appreciate the significance of the work now going on at Washington in the valuation of the railroads, with respect to this matter of reproduction cost versus actual cost. Through ignorance or through direct purpose the accounts of a majority of our railroads have been kept so that we cannot determine therefrom the actual cost of a large portion of their physical property, to say nothing of determining what was built by direct contributions of the owners, and what was built out of surplus earnings or in the form of maintenance incorrectly charged to operating expenses.

Unless those in charge of the valuation work shall see their way clear to have engineering estimates made of the reasonable cost of construction at the time when built, of such portions of the property now in use as cannot be traced to the actual cost on the books and other records of the company, we shall have no valuation whatever of a large portion of the railroads of this country, outside of the rolling stock, and perhaps land, rails and a few small items except that furnished on the basis of estimates of reproduction costs today. Precedents will also be established of ignoring the actual historical costs, which will have far-reaching and almost overwhelming influence in the work of valuing city utilities and in the decisions of our state railroad and public service commissions and of our courts.

No time is to be lost! We are now facing issues fraught with as great economic significance, and giving promise of as stirring political controversies, as have ever attended our public discussions of tariffs, money, or even the emancipation of the slaves. The difference between the cost of our public utilities less their depreciation, and their estimated reproduction cost less depreciation, is much greater than the value of all slaves freed in 1863. We may well pause and consider. Momentous issues are now being decided.

ORIGINAL COST

BY HALFORD ERICKSON

Chairman, Wisconsin Railroad Commission

IT IS with some hesitation that I comply with the request to furnish a brief discussion on what is really meant by the original cost of public utilities and on how this cost may be determined. The main reason for this hesitancy may be traced to the many uncertain and conflicting views concerning it that appear in current discussions upon this subject. Among the elements that should be given consideration in determining the fair value of the utilities there is hardly one that is more frequently mentioned or to which many attach greater importance than is the case for original cost. And yet this cost seldom appears to be either clearly defined or fully determined, nor has it often been so used in the appraisals that one can definitely tell just what weight has been given to it therein.

Inquiries into the original cost are in a measure historical in their nature. They involve to some extent the cost of each unit of property from the time it is first placed in the service to the time it is taken out of the service or replaced by some other unit. These costs, or the material upon which they are computed, may be obtained from the original records of the plant, as well as from other sources. The following brief discussion upon this subject is largely made up of what I have already had occasion to say regarding it in other connections.

Now, what is meant by the "original cost to date"? Is it the cost of the units of property first installed plus the entire cost of the new units by which the original units may have been replaced when worn out or rendered useless; or is it the cost of the original units plus, on the one hand, only those amounts by which the cost of the new units by which wornout units were replaced exceeded the cost of the unit taken out, and minus, on the other hand, the amounts by which the cost of the units installed for renewal purposes are lower than the costs of the units taken out or replaced? Its meaning can not very well agree with the first of these illustrations; for if it did, it would follow that for plants old enough to have had any considerable parts of the property renewed, the cost of the same would be entirely too great in proportion to their "fair value." Again, it would mean that the cost of renewals already borne by the public through rates for service high enough to cover depreciation might also be included in the fair value upon which interest and profits should be allowed. It might also lead to higher than fair valuations for other purposes.

The second in order of the above two illustrations

appears to much more fully and justly cover actual conditions. The cost of the property first installed, if in existence, is of course a part of the cost of a plant. The cost of renewing depreciated and useless property, however, should be viewed in a different light. Depreciation, within certain broad limits, should be covered in the rates charged by the utility for service rendered, and in most cases is undoubtedly so covered, whether set aside in a reserve or in some form paid out to the owner of the utility. Such depreciation charges are usually supposed to cover the cost of the unit to which they apply. If, when the time for renewals has actually arrived, it is found that through changes in prices the actual cost of such renewals either exceeds or falls below the cost of the unit replaced or the cost covered by depreciation charges, then it is proper that such differences between the cost of the units put in place of the unit taken out should receive recognition in determining the cost to date.

In order to recognize in the cost of the plant such differences between the cost of the property taken out and the cost of the property by which it is replaced, it is only necessary to charge the construction account with the actual cost of the first property or units as well as with the actual cost of each unit by which existing units are renewed, and to credit the construction account with the actual cost of each unit taken out. When the construction account is properly charged and credited in this manner the balance in this account at any particular time will show what may be regarded as the proper original cost to the investors of the property of the utility. In order to illustrate a properly kept construction account from this point of view the following table is included.

The following account or illustration covers a hypothetical plant costing \$9,000 when first built, and made up of three classes of property of which the first, or class "A," amounts to \$3,000 and has a life of three years; while the second, or class "B," amounting to \$3,000 has a useful life of six years and the third, or class "C," also costing \$3,000, has a life of nine years. For the sake of simplicity, only one account is used. This account is charged with the first cost of the plant which amounted to \$9,000. It is subsequently charged with the cost of the units put in and credited with the cost of each unit or class of property taken out, when renewals had to be made. It covers such entries for a period of something more than twelve years. No extensions beyond the first construction are supposed

to have been made, although such extensions would in no way have affected the principles involved, since extensions must be treated the same as the original parts of the plant.

CONSTRUCTION ACCOUNT

CHARGES				CREDITS			
Total Cost Original Plant				\$9,000			
Renewal				Cost			
1st	Class A	3d	Year	3,500	Class A	taken out	1st Time
2d	"	A	6th	3,700	"	A	"
1st	"	B	6th	3,300	"	A	"
3d	"	A	9th	3,700	"	B	"
1st	"	C	9th	3,200	"	C	"
2d	"	B	12th	3,700	"	B	"
4th	"	A	12th	3,600	"	A	"
Total.....				33,700			
				Cost existing property	10,500		
				Total.....	33,700		

The above construction account is thus charged with the cost of the original plant. This is the first entry. It is subsequently charged with the cost of the units put in and credited with the cost of the units taken out for seven different renewals of the property involved. For five of these renewals the property put in costs more than the property taken out. For one of the renewals the cost of the property put in was the same as the cost of the property taken out. For one the cost of the property put in was less than the cost of the property taken out. The result of these variations in cost as between the property discarded and the property put in its place is that the net cost of the plant during the period had increased from \$9,000 to \$10,500 as shown by the balance in the account.

These facts clearly show that the cost of the plant at the end of the period covered by the account amounted to \$10,500. This cost is also the amount that under normal conditions can be regarded as the fair "original cost to date" of the plant. At any rate, this is the case when the facts involved are viewed in the light of economic principles as well as when considered from the point of view of generally recognized accounting and operating practices. In the final analysis it means that the "original cost" of a plant is the cost at which the existing property of the plant was acquired and put in place. This conclusion is supported by the facts as well as in reason.

Had the construction accounts been correctly kept on the bases just outlined, it is obvious that the balances therein would show the true original cost to date of the plants, or the cost of their existing property. But few, if any, accounts have ever been regularly kept on this plan. When the books and records are examined one usually finds the situation to be such that there is no way in which the original cost to date of the plant can be determined therefrom even with a fair degree of correctness. The first cost usually includes many changes which do not properly belong in the accounts. The entries also often bear unmistakable

evidence of both over and under charges affecting otherwise proper items. The costs of the property taken out and put in at the time of the renewals of the property that has become useless through depreciation are seldom properly entered. There is also as a rule inextricable confusion between the cost of renewals, the cost of ordinary repairs or maintenance and this confusion also extends to the treatment of the costs of additions and betterments to the property. In addition to complications of this nature it is also a fact that for most utilities the greater proportion of at least the older records are out of existence. The situation in these respects is well expressed by President A. T. Hadley in a statement printed on page 236 of the report of the Senate Committee on Interstate Commerce, 62d Congress, 3d Session, which reads as follows:

"My own impression, based partly on earlier studies and partly on experience with the Commission, is that it is going to be impossible to ascertain the original cost of specific pieces of property with sufficient accuracy to make this part of the work worth doing. Matters of past history like this are extremely expensive to follow up. Many of the records were made at a time when railroad bookkeeping was far less systematized than it is now. Some of them were made purposely misleading, not infrequently with the collusion of the State authorities themselves, who were so anxious to have railroads built that they encouraged people to enter the value of rights of way, of services rendered the company, and other considerations furnished by subscribers to capital stock at a figure purposely in excess of the true value. Still less possible is it to find to whom money was paid or who sustained the losses represented by decreased value of capital stock and other properties. Speaking broadly, therefore, I should say that the attempt to ascertain the cost of property in the past with any degree of completeness or accuracy was impracticable, and that an incomplete or inaccurate estimate would involve an expense far in excess of its utility to the public."

When the cost of the new property put in is greater than the cost of the depreciated property taken out, the excess in the former case may be covered by the issuance and sale of additional securities. When, on the other hand, the cost of the property taken out is the greatest, it may be proper to charge the difference to the depreciation reserve and credit the same to the surplus account. Such difference may even lead to reductions in outstanding securities. There are also other ways in which such differences may be adjusted. It may be noted in this connection that the depreciation reserve being accumulated on the basis of the property taken out will, when the cost of this property is the greatest, necessarily exceed the amount that is required for renewal.

While in the preceding table all the property for the sake of convenience is included in one account, it is not

meant thereby that only one account should be used for this purpose. On the contrary, it is generally best in actual practice to employ one account for each class of property or for each of the distinct classes of construction outlays. It is in dissecting and verifying these accounts as ordinarily kept, however, that the real difficulties in determining the original cost are encountered. The method of appraisal, on the other hand, which seeks to derive only the actual cost of existing items circumvents this difficulty, since the inventory of physical items makes no distinction between property constructed and property purchased. It would, of course, be necessary to derive evidence of the time existing units of property were first installed, and the cost of such units at the time of their installation. However, this inquiry would be directed only toward finding cost as of a particular date and would not require the derivation of any sequence in cost. To this end cost data from other sources can be relied upon as supporting evidence without doing violence to the theory of actual cost.

The method of investment accounting briefly outlined above suggests that carriers are entitled to charge the construction accounts with all costs necessarily incurred for capital and renewal purposes in furnishing its transportation plant regardless of the length of time they have been in service and, conversely, carriers should decrease their construction accounts by the amount of original investment expenditures represented in portions of railway plant retired because of depreciation, and that the cost of depreciation is a proper charge to the operating expenses or costs upon which the rates charged for the services rendered are based. Competitive trading recognizes the recoupment of depreciation loss in this manner. If these propositions are sound the determination of the "Actual Cost of Existing Items" is equivalent to a determination of the correct accounting balance of the investment as of the present time.

The facts and theories thus presented indicate quite clearly that by the "original cost to date" of the so-called physical property of public utilities should ordinarily be understood the cost of the existing physical property used for the convenience of the public. These facts further show that there are few, if any, instances where such "original cost to date" can be correctly obtained from the accounts of the utility.

The fact, however, that the accounts seldom disclose the true original cost to date of the property does not mean that this cost cannot be obtained. That this is the case becomes quite clear when the conditions

involved are more fully considered. As stated above, the property involved is the existing property, the very same property of which the cost of reproduction at the present time is desired. Since the property involved is the same, the questions involved are in fact reduced to how to find the cost of this property at the time it was first put in place, and how to find the present cost of reproducing it. The first step in obtaining these costs is to secure a complete inventory of the property. The next step is to obtain reliable data as to the unit prices of the labor and material involved at the time the property was put in, as well as at the present time. With a complete inventory and with full data as to unit prices for the two periods, the original cost new and the cost of reproduction new of the property are largely matters of computation. The depreciation of this property must then be obtained. It is ordinarily determined from facts relating to the age, the expected useful life, and the actual condition of each part of the property involved. The amount of the depreciation thus obtained can then be applied to the original cost new of the property as well as to its cost of reproduction new. That is, depreciation, being the same, can be applied to both the original and the present cost of the property. When such depreciation in both cases is deducted from the cost new, the so-called existing value is obtained.

Experience shows that the unit prices can be had with fully as much accuracy for the period when the property was actually put in as for the period covering the present time. There are, for instance, few classes of labor and material involved for which the records of general market prices does not extend back into the past for considerable periods. In addition to this, the records of the utilities in many instances will be found to reveal the actual cost at which a large proportion of the units or property were put in. In several instances where the matter was actually tried out, it has been found that the original cost of the existing property was obtained in an even more satisfactory way than the cost of reproducing it.

While the views as to what is meant by the original cost of the physical property that have thus been expressed above, differ somewhat from the more generally accepted views upon this matter, they are believed to be sound, at least in the main. To adopt them with such modification as may be necessary would not only seem correct in theory, but would place the original cost upon a basis where it can be determined with some degree of correctness.

CONSTITUTIONALITY OF HISTORICAL COST METHOD OF PUBLIC UTILITY VALUATION

By ALFRED BETTMAN

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IN THE regulation of public utility rates or the determination of the reasonableness of proposed rates, the prevailing practice bases such regulation or determination upon a "valuation" of the property of the utility. Amongst the various methods of valuation, two have the largest following and are contending for the mastery—namely, the "cost of reproduction" method and the "original or historical cost" method. Stripped of the variations and modifications to which these two methods are subjected in discussion and practice, the first may be described as the calculation of the cost of reproducing the property of the utility in its existing condition, allowance being made for accrued depreciation; while the "historical cost" method aims to ascertain, from an analysis of the financial history of the utility, the aggregate amount of moneys which the utility has actually cost the investors. The first method seeks its justification in the assumption that thereby the value of the utility is obtained; whereas proponents of the second or "cost" method claim its justification in the theory that, when constructing and operating a public utility, the owner thereof acts as the agent of, or trustee for, the public and as such agent or trustee ought suffer no financial loss nor gain any profit, interest or return on the moneys invested being treated not as profit but as the cost of obtaining such moneys.

In the actual administration of the cost of reproduction method, practical considerations and justice seem to require constant departures from logic and consistency, and the historical cost theory presents an increasing appeal to those students of rate making who by temperament incline toward a theory which can be applied with relatively strict logic and consistency.¹ The vague and costly dangers which lurk in "the cost of reproducing the business," a recent outgrowth of the cost of reproduction theory, are causing more and more persons to seek protection for the public interests in the adoption of the historical cost plan. This tendency is checked, however, by the prevalent feeling that the courts have held the historical cost method to be unconstitutional, that is—that rate making on the basis of historical cost has been authoritatively declared to be unconstitutional.

A critical examination of this impression is, there-

fore, timely. Let us begin by posing the exact question: if, by express statutory language or by the authority granted to a commission, a legislature provides for the fixing of public utility rates on the basis of historical cost, is such legislation or the administration thereof unconstitutional in so far as it may impose upon any particular utility lower maximum rates than could have been imposed by the use of the cost of reproduction method?

The constitutional provisions usually invoked in rate cases are the clauses of the Fourteenth Amendment which provide that no state shall "deprive any person of life, liberty or property without due process of law, nor deny to any person within its jurisdiction the equal protection of the law," the similar due process of law clause of the Fifth Amendment, the clause of the Fifth Amendment "nor shall private property be taken for public use without just compensation" and the analogous provisions of the state constitutions. The opinions in rate cases have been rather lacking in closely reasoned application of the recognized scope and intent of these clauses to the facts and results of the particular rate regulation before the court. The three classes of constitutional prohibitions are frequently treated as though synonymous in meaning or, at least, as though a rate which infringes upon any one of the three necessarily thereby violates the other two. Any thorough discussion of the question must include an attempt to separately apply each of these constitutional prohibitions.

WHAT IS DUE PROCESS OF LAW IN VALUATION PROCEEDINGS?

First, as to due process of law clause. In its primary meaning, this clause simply requires due procedure on the part of the rate making bodies, procedure which will give the utility involved a fair opportunity to present its side of the issues.² When, as is generally the case, the statute under consideration provides for due notice and hearing, opportunity to the utility to produce evidence and arguments and for court review, then the requirements of this primary meaning of the due process of law clause would seem to be perfectly satisfied. The mere fact that rates are fixed upon a basis of actual investment rather than on the basis of reproduction cost cannot of itself constitute an absence of due procedure.

² *San Diego Land Co. vs. National City*, 174 U. S. 739.

¹ See address on "The Regulation of Public Service Corporation" by Prof. John H. Gray of University of Minnesota in the 1913 *Proceedings of The American Economic Association*.

As developed by the courts, however, the due process of law prohibition is directed against substantive results as well as against unfair procedure. It prohibits legislative action which is "arbitrary" or "capricious," which cannot, by any process of fair reasoning, be attributed to a genuine attempt on the part of the legislature to find and formulate some general principle reasonably applicable to the subject-matter of the legislation. The historical cost method of valuation is, however, based on a theory and principle which may be expressed in terms of economics or ethics or public policy, namely, that the price to be paid for public, as distinguished from private, services should be calculated according to cost rather than value; that increase in the value of properties engaged in public service which represents no increase in the outlay of private capital may be credited to the public and ought, therefore, to belong to the public, and, in turn, any decrease in the value of such property not covered by repayment of capital to the investors ought to be borne by the public; that the evils arising from private ownership of public utilities are largely due to the treatment of such utilities as speculative enterprises and that these evils can be minimized and public regulation made more effective by placing investments in such properties on a basis of security rather than of risk. One may agree or disagree with these principles; but no one can affirm that a legislature might not genuinely believe in them and genuinely seek to apply them. The adoption by a legislature of the "cost" method of valuation, therefore, cannot be called "arbitrary" or "capricious."

HISTORICAL COST METHOD NOT CONFISCATORY

In rate cases the courts have further decreed that the due process of law clause prohibits confiscation; that is, the clause is interpreted as directed not merely against unfair procedure and unreasoning or unprincipled legislative action, but also against legislative action which will actually result in confiscation of property. "Confiscation" has received no exact definition. Taking any fair meaning of the word "confiscation" however, the use in rate making of the historical cost method of valuation cannot be accused of being confiscatory. This method aims to guard and secure every dollar of private moneys which has been honestly invested in the production or performance of the public service, with interest thereon. The courts have sometimes held that the public is not necessarily bound to secure a return upon the outlay of the investors in a utility and that the fact that a particular rate will not produce such a return does not necessarily demonstrate the unreasonableness or unconstitutionality of the rate. For instance, in *Covington & Lexington*

Turnpike Company vs. Sandford, 164 U. S. 578, the court said:—

"A corporation is not entitled as of right and without reference to the interests of the public, to realize a given per cent upon its capital stock. Stockholders are not the only persons whose rights or interests are to be considered. The rights of the public are not to be ignored. The public cannot properly be subjected to unreasonable rates in order simply that stockholders may earn dividends."¹

The historical cost theory of valuation therefore affords more protection to the investment than the courts have declared to be the minimum which must be furnished in all cases. To hold that a rate based on "cost" necessarily violates the due process of law clause because not based on "value," is to beg the question; the very question before us being—what principle of valuation is imposed or forbidden by the due process of law clause. The mere fact that legislation may impair property values or lessen earning capacity does not demonstrate the unconstitutionality of such legislation.² Many valid exercises of the police power have that effect. The property of a public utility is acquired and its value created subject to the legislative power over rates. The preservation of that value cannot be the sole test of the scope of that legislative power. Certainly a principle which insists on the protection of the actual outlay of capital and permits only the excess of earning capacity above a fair rate of interest on that outlay to be converted by the public into lower rates, cannot justly be called confiscatory; and when that principle is administered with the formality and justice of procedure which constitutes the primary meaning of due process of law, there is no justification for holding the due process of law clause to be violated.

EQUAL PROTECTION OF THE LAWS

To proceed to the equal protection of the laws clause. The adjudged cases show little attempt to thoroughly reason out the effect of this clause upon the rate making powers. There appear throughout the cases, however, intimations of the court's thought, and it is these intimations which must be scrutinized.

For instance, in some of the cases there lurks the thought, that by the use of the cost of reproduction method the value of a public utility's assets is ascertained, and if a fair return is not allowed upon this value, discrimination results against the public utility, in that the state does not attempt to interfere with a fair

¹ See also *Reagan vs. Farmers' Loan & Trust Co.*, 154 U. S. 362 at 412.

² *Marehant vs. Penn. R. R.*, 153 U. S. 380;

Mugler vs. Kansas, 123 U. S. 623;

L'Hote vs. New Orleans, 177 U. S. 587;

Freund Police Power § 513.

return upon the value of property engaged in private business.¹ But the power of rate regulation has been exercised exclusively over property affected with a public interest. To regulate the rates of public utilities and to leave the earnings of private businesses unregulated is a discrimination recognized for centuries and arising out of the basic distinction between the status of the two classes of enterprises. Nor is it true that the Constitution prohibits interference with a fair return upon the actual value of property employed in private business. Many valid exercises of the police power impair the value or earning capacity of property engaged in private business. If, therefore, no unreasonable discrimination is attempted between the different utilities themselves, the adoption of any particular method or basis of public utility rate regulation is not, in and of itself, unconstitutional discrimination.

There also occurs in the adjudged cases, vaguely hinted at rather than clearly expressed, the thought that the equal protection of the laws clause requires an identical measure of damage to be applied in the calculation of the amount to be paid for both private and quasi-public property taken for public use, that fair value, regardless of cost, is the measure of such damage applied to the taking of private property, and that, when the value of a utility exceeds its cost, a rate based on cost is tantamount to the taking of its property at less than value and, therefore, results in unconstitutional discrimination.² This thought, however, that the equal protection of the laws clause imposes impartiality in the measure of damages to be allowed in condemnation cases, represents a misleading confusion of two separate constitutional prohibitions, each of which has a sphere of its own and is quite capable of taking care of its own sphere. The eminent domain clause of the Constitution, state or national, requires just compensation in every case of taking property for public use and itself prevents unjust discrimination in the calculation of damages to be paid.³

CONSTITUTION DOES NOT REQUIRE IDENTICAL MEASURE OF VALUE FOR PRIVATE AND QUASI PUBLIC PROPERTY

Applying, however, the equal protection of the laws clause to the determination of the measure of value of property taken for public use, still an absolutely identical measure of value of all classes of property, public, quasi-public or private would not be required by it. For this clause prohibits only arbitrary and unreasonable classification and permits rational, logi-

cal, appropriate classification.⁴ This clause, in and of itself, would permit special methods of appraising public utilities appropriate to such property, just as it permits specially appropriate methods of assessing such property for taxation.

If the Constitution were interpreted as imposing the same method or measure of value in rate cases as in cases of condemnation of private property, then the cost of reproduction method, which is the prevailing method and frequently approved by the Supreme Court of the United States, would itself be unconstitutional. For the measure of value sanctioned in cases of condemnation of private property is market value, a measure quite different from reproduction cost and one which will almost always produce a result above or below the cost of reproduction. In a recent case,⁵ a city, was about to take for public use a piece of land with the house built thereon, a very ornate and expensive residence building. At the time of the erection of the house, the neighborhood had been the fashionable residence district of the city, but had since become a tenement house district of the poorer sort. The property owner claimed the right to introduce evidence of the cost (both original and reproduction cost) of erecting the house. He desired to prove its present value by adopting the very cost of reproduction method generally applied to utility valuations. Obviously much of the labor and materials which had gone into the erection of the house had ceased to have a value in the market and a reproduction of this labor and materials could not restore this value. So the court rightly refused to permit the introduction of evidence of reproductive cost on the ground that it had no bearing on the market value of the property and that market value of the house and lot together alone determine the basis of compensation. In truth, there is fallacy in assuming that the "cost of reproduction" method discloses value, in the ordinary sense of exchange or market value. The market value of a stretch of street railway track, for instance, is the value of the rails as rails or metal, and not at all the cost of reproducing such tracks on the street. Similarly the power house, considered as a building, will practically never have a market value equal to its reproductive cost (allowing deduction for depreciation), and the same is true of the whole utility plant, considered as a group of physical structures and appliances. Considered as a going concern, including its business and franchises, the market value of a public utility is a standard of value absolutely inapplicable to rate regulation. For the market value of a public utility is largely or partly based upon its past earning capacity and on the chance

¹ *Chicago Elect. Ry. Co. vs. Minnesota*, 134 U. S. 418, 458.

² *Reagan vs. Farmers' Loan & Trust Co.*, 154 U. S. 362, 399, 410.

³ For discussion of distinctions between eminent domain and police powers, see Freund *Police Power* §511; *Mugler vs. Kansas*, 123 U. S. 623.

⁴ *Jeffrey Mfg. Co. vs. Blagg*, 35 Supreme St. Rep. 167.

⁵ *Derou vs. City of Cincinnati*, 162 Fed. R. 633.

that the public will permit this earning capacity to remain unimpaired; whereas rate regulation arises from the right of the public to produce change in the earning capacity. The principles of valuation authoritatively laid down for the ascertainment of value in cases of condemnation of private property cannot, in the nature of things, be appropriately applied or imposed as a basis for rate regulation.

JUST COMPENSATION FOR PROPERTY TAKEN FOR PUBLIC USE. DETERMINATION OF METHOD OF VALUATION IN RATE CASES A LEGISLATIVE AND NOT JUDICIAL FUNCTION

We come now to the constitutional clauses which require just compensation to be paid for property taken for public use. Reference to these clauses appears, on analysis, to be irrelevant or, at least, unnecessary in rate cases. The power to regulate rates is and has always been a legislative power distinct from the power to take property for public use; each has its own scope and limitations, and this drawing of the constitutional limitations upon the exercise of the one into cases relating to the other represents an unnecessary confusion of ideas.

This confusion can be demonstrated from another angle. The power of rate regulation is a legislative power and, therefore, the incidental power of deciding the methods of valuation upon which rates are to be based must be a legislative power; whereas the power to determine the measure of compensation for property taken for public use is a judicial and not a legislative power.¹ If the Constitution be interpreted as permitting the courts to impose any particular method or standard of rate making in each case, then the Constitution has transferred the power of rate regulation from the legislative to the judicial branch of the government. But the Supreme Court of the United States has consistently declared and continues to declare that rate regulation is a legislative power; as, for instance, in the following passage from the *Minnesota Rate Cases*, 230 U. S. 352, 433.

"The rate-making power is a legislative power and necessarily implies a range of legislative discretion. We do not sit as a board of revision to substitute our judgment for that of the legislature, or of the commission lawfully constituted by it, as to matters within the province of either. *San Diego Land & Town Co. vs. Jasper*, 189 U. S. 439, 446.—The inquiry is whether the State has overstepped the constitutional limit by making the rates so unreasonably low that

the carriers are deprived of their property without due process of law and denied the equal protection of the laws."²

It is, therefore, the province of the state or nation's legislative organs to determine the valuation or other basis used to measure the reasonableness of rates and, in passing upon the constitutionality of the rate, a court does not act as an appellate valuation tribunal and has not the function of setting aside the rate because of disagreement with the theory of the method of valuation used. The Court's province should be the same as in passing upon the constitutionality of any exercise of general legislative power—to decide whether the legislature has acted capriciously, arbitrarily, irrationally or upon a confiscatory principle. In short, if the eminent domain clause applies to rate regulation, it is simply the due process of law clause in another garb.³

THE COURT DECISIONS HAVE LEFT THE QUESTION OPEN

We see then, that, as a matter of *a priori* reasoning, rate regulation upon the basis of historical cost does not violate the provisions of the Constitution customarily cited in rate cases. The impression distinctly prevails, however, that the Supreme Court of the United States has held that the cost of reproduction theory must be adopted, or, at least, that any method based on the ascertainment of actual cost would be unconstitutional in any case in which actual cost is less than reproduction cost. It is true that the Supreme Court of the United States, as well as other courts, has constantly stated a "fair return upon a fair value" to be the only lawful basis of regulation, and has sanctioned the cost of reproduction method as a method for ascertainment of fair value. But the reports do not disclose any case in which the court necessarily had before it this question of deciding upon the constitutionality of a rate based on cost as distinguished from value. To bring about this necessity would require a case in which a proposed rate would furnish a proper return upon original or actual cost but would fall short of furnishing a fair return upon value. There are cases in which the figures for both actual and reproduction cost (the latter called value) were before the court and the court chose to base its decision upon "value" rather than cost. But in each of these the result of the case would have been the same if the cost theory had been applied. For instance, in *The Minnesota Rate Cases*, 230 U. S. 352, as to two of the railroads

² In *Prentiss vs. Atlantic Coast Line*, 211 U. S. 210, the Court through Mr. Justice Holmes, analyzes the nature of the act of rate making, and concludes it to be legislative in its nature, whether committed to a legislature, commission or court.

³ See *L. & N. R. R. Co. vs. Garrett*, 231 U. S. 299, 313.

¹ *Monongahela Navigation Co. vs. U. S.*, 148 U. S. 312, 327.

the Court, passing on the question of valuation, found the evidence introduced insufficient to enable the Court to determine the value of the properties and therefore insufficient to demonstrate the confiscatory effect of the rates; and, as to the third railroad involved, the rates were confiscatory [upon either "cost" or "value" basis of valuation. In *Cotting vs. Kansas City Stockyards Co.*, 183 U. S. 79, the majority of the court found the rates to be confiscatory upon any theory of valuation and avoided determination of the proper basis of valuation. An analysis of other leading cases will disclose this same condition.¹ And few, if any, of the cases involved a determination of the constitutionality of an express legislative policy, embodied in statute or practice, to adopt a "cost" theory. There have been cases in which actual cost exceeded reproductive cost or value and in which, therefore, the utilities themselves desired the actual cost basis to be used, but in which the state insisted upon the "value" basis and was upheld by the courts.² But there is no case in which the issue compelled the court to decide and, therefore, in which the court did decide that the state or nation may not adopt the cost theory. In fact the Supreme Court, evidently realizing the developing and fluid condition of the legal and constitutional principles involved, has expressly refrained from deciding that any particular theory or theories must in all cases be adopted. Where the record before it disclosed evidence of cost, the Supreme Court has generally treated that evidence as having some bearing on the case and as entitled to consideration and not as rendered irrelevant by the Constitution.³

The opinions contain frequent insistence upon the private nature of the property of public utilities, but there occur also, from time to time, passages recognizing the "agency" conception of public utilities; as for instance, in *Smythe vs. Ames*, 169 U. S. 466, 544, where the Court said:—

" A railroad is a public highway, and none the less so because constructed and maintained through the agency of a corporation deriving its existence and powers from the state. Such a corporation was created for public purposes. It performs a function of the state."

and in *Cotting vs. Kansas City Stock Yards Co.*, 183 U. S. 79, 93, where some members of the court, making a distinction between public utilities proper and those enterprises which, like stockyards, are simply private

¹ *Smythe vs. Ames*, 169 U. S. 466; *Cedar Rapids Gas Co. vs. Cedar Rapids*, 223 U. S. 655.

² *San Diego Land Co. vs. National City*, 174 U. S. 739; *Stanislaus County vs. San Joaquin Co.*, 192 U. S. 201; *San Diego Land Co. vs. Jasper*, 189 U. S. 439.

³ *Reagan vs. Farmers Loan Co.*, 154 U. S. 362, 412; *Smyth vs. Ames*, 169 U. S. 466, 546; *San Diego Land Co. vs. Jasper*, 189 U. S. 439; *Ames vs. Union Pacific Co.*, 64 Fed. R. 165; *Cotting vs. Kansas City*, 183 U. S. 79, 91.

properties affected with a public interest, and speaking of the investor in a public utility proper, said:—

"it may be said that he voluntarily accepts all the conditions of the public service which attach to like service performed by the State itself."¹

We may conclude, therefore, that the constitutionality of the historical cost method of public utility valuation for rate making purposes is still an open question.

FUNDAMENTAL DISTINCTION BETWEEN THE STATUTORY APPELLATE JURISDICTION OF COURTS IN RATE AND VALUATION CASES AND THEIR PROVINCE IN QUESTIONS OF CONSTITUTIONALITY

In the Minnesota rate cases the Supreme Court declined, in the valuation of railroad right-of-way, to adhere to the logic of the cost of reproduction method. In valuing street-paving over gas-mains and the like, where the existing paving had been laid after the installation of the mains, courts have often justified the use of actual cost. In many valuations purporting to be made on the basis of reproductive cost, allowance has been made for so-called "going value," calculated according to the actual losses suffered by a utility previous to the period when it began to pay; obviously another illogical insertion of actual cost methods. This oscillation between or compounding of differing valuation theories seems appropriate to the process of valuation, but out of place in a determination of the constitutionality of a particular theory or compound of theories which may have been adopted by the proper legislative authority. On the question of the value of any particular utility not merely two opinions, but innumerable variations and gradations of opinion are generally possible. In deciding the value of a utility a given record of the facts and evidence produced in a valuation proceeding, the nine judges of the Superior Court of the United States might genuinely arrive at nine different and distinct amounts. When the court is engaged in passing upon the constitutionality of the

¹ See also *San Diego Water Co. vs. San Diego*, 118 Cal. 556, where the Court ably discusses various theories of valuation, demonstrates the inapplicability of market value, argues the unfairness of reproductive cost method, and practically adopts the "historical cost" and "agency" theories. The following passage from *South etc. Ry. Co. vs. Railroad Commission*, 210 Fed. R. 465, 480, shows a hint of recognition of principle that the disposition of increase of value not due to added capital investment is a question of legislative policy and not of constitutionality:

"The distribution of the increment due to the increased population in the tributary territory and to increased density of traffic is, as between the carrier and its patrons, a matter of legislative policy, not to be controlled by the courts, unless less is left to the carrier than a fair return for the service rendered and the property employed at the time the court is called upon to act."

methods used by the valuing body, does not this possibility of many varying results show that the determination of the value of the utility is outside the field of constitutional law? In many of the states, the highest courts have a statutory appellate or reviewing power over a rate or valuation fixed by a public utilities commission. The functions of the courts in cases of judicial review of the orders of the Interstate Commerce Commission are described as follows in *Interstate Commerce Commission vs. Union Pacific R. R.*¹

"It has been settled that the orders of the Commission are final unless (1) beyond the power which it could constitutionally exercise; or (2) beyond its statutory power; or (3) based upon a mistake of law. But questions of fact may be involved in the determination of questions of law, so that an order, regular on its face, may be set aside if it appears that (4) the rate is so low as to be confiscatory and in violation of the constitutional prohibition against taking property without due process of law; or (5) if the Commission acted so arbitrarily and unjustly as to fix rates contrary to evidence, or without evidence to support it; or (6) if the authority therein involved has been exercised in such an unreasonable manner as to cause it to be within the elementary rule that the substance, and not the shadow, determines the validity of the exercise of the power."

(2) involves mere statutory construction. (3), (5) and (6) involve questions analogous to those arising in error or appellate proceedings brought to set aside the decision of a lower tribunal on the ground that it

¹222 U. S. 541. See also *Interstate Commerce Comm. vs. Louisville & N. R. R. Co.*, 227 U. S. 88.

is contrary to the evidence or without support of sufficient evidence; while only (1) and (4) involve constitutional law. Surely the issues and point of view appropriate to the determination of these constitutional questions differ basically, in kind and not merely in degree, from the issues and point of view appropriate to the exercise of this merely appellate and error jurisdiction. As long as rate regulation is admitted to be a legislative function the question before the Court, when the constitutionality of a rate based on a valuation is attacked, is not what is the correct valuation, but whether the particular theory or method of valuation used by the rate regulating body can be called so capricious, so arbitrary, so lacking in reasoned principle or so necessarily confiscatory as to unquestionably violate the prohibitions of the Fifth and Fourteenth Amendments. The practice of regulation by valuation tends to increase. There is the prospect of increasing litigation, with increasing complexities and variations in the facts bearing on the valuations of the utilities involved. In cases upon the constitutionality of particular exercises of the legislative power of rate regulation, the courts would simplify their problem and avoid much vagueness of principle and inconsistency, by maintaining the same attitude and remaining within the same province as they have so often declared to be their proper attitude and province when deciding the constitutionality of laws passed in exercise of other classes of legislative power.

ACTUAL COST

BY DR. ROBERT H. WHITTEN

Secretary, Board of Estimate and Apportionment, Committee of City Plan, New York City

I will touch briefly on one or two phases of this broad and complex problem from the point of view of theory rather than of existing law—from the point of view of what ought to be rather than of what is. The law of the subject is yet largely undetermined. It is in a formative stage and serious discussions such as we are having at this conference will have great weight in its final settlement. I have every confidence for the future that the "ought" will become the "is."

For the normally successful public utility enterprise the reasonable rate of charge is the rate that affords the company a reasonable and no more than reasonable compensation for its entire service to the public. Reasonable compensation is here equivalent to the normal cost of production.

There is no reason why in the case of public utility the public should be required to pay more than the normal cost of production, and sound reason why in the long run the public cannot pay less. Normal cost of production is the

amount which in the long run it is necessary to pay to secure the utilities demanded by the public. It is the amount that will secure an equilibrium between demand and supply.

In the case of a commodity requiring no capital outlay the normal cost of production is easily determined. It is the present normal cost of the labor and materials entering into its production. Cost consists merely of "operating expenses" and is not complicated by the question of capital cost and interest and profits thereon.

In the case, however, of a commodity requiring a large fixed investment, the determination of a normal cost of production is a complex process, in the working out of which there is room for a wide divergence of opinion. To the normal cost of labor and materials there must be added a fair estimate for depreciation and a fair return on capital cost. The normal cost of labor and materials is complicated by the necessity of including provision for maintenance, repairs and

depreciation. The determination of a normal return on a normal capital cost requires a determination of two very difficult and complicated problems: (1) What is the amount of the normal capital cost, and (2) what constitutes a normal return on such amount.

Normal capital cost as applied to a new enterprise is a comparatively simple concept; but what is it as applied to a long established enterprise—to a water supply plant, a gas plant or a railroad system? Is it normal cost at the time originally installed or last renewed, or, on the other hand, is it the present cost of reproduction? Is it actual cost or reproduction cost? We start with the premise that the reasonable rate of charge is to be determined by the fair cost of production. The point at issue between actual cost and reproduction cost is really whether by cost of production we mean cost at a particular moment or cost averaged over a period of years.

As justifying the present-moment-cost or reproduction method it may be argued that the public is always entitled to secure service under present conditions as to cost of production. It is entitled to secure service at a rate of charge sufficient only to cover cost of operation, interest and profits of a substitute plant of the most modern approved design, capable of performing the same service as the existing plant. The company assumes the risk and enjoys the profit, if any, incident to this arrangement. This method involves a reproduction of the service rather than a reproduction of the plant. If the old plant were wiped out what would it cost at present to construct and operate a plant capable of performing the service now performed by the old plant? In the case of a water plant, perhaps an entirely new source of supply would be used and the distribution system radically changed; in the case of a gas plant, a different process of production employed and a few large gas holders substituted for many small ones; in the case of an electric plant, larger units of production employed; in the case of a railroad, there might be a radical relocation and realignment of roadbed and important changes in the method of construction, leading to great economies in operating cost. It has been stated that "if our railways were to be built anew, in the light of our present knowledge and with our present traffic offerings and financial resources, vast changes would be made in the character of construction."¹

As thus stated, the reproduction method has so many difficulties that it is practically never employed. The reproduction of the service involves not only the determination of the cost of the most efficient substitute plant, but the determination of the present cost of reproducing the business, the proper allowance under present conditions for interest and profit and the operating costs for the substitute plant. In most cases it is exceedingly difficult and expensive to determine the design of an equally efficient substitute plant. In the case of a railroad, for example, the cost of determining a substitute location and of estimating the operating costs thereon would be so great as to render it entirely impractical as a factor in rate regulation. It would require a careful

survey of various available locations and estimates of construction and operating costs. The engineering costs of such survey and estimates would be enormous.

The cost of reproduction in practice, therefore, instead of meaning the cost of a substitute plant of the most modern approved design, capable of performing the same service as the existing plant, has come to mean the cost of a substantially identical reproduction of the existing plant. This is the usual method. It involves, however, a partial abandonment of the reproduction of the service theory and a somewhat imperfect recognition of the fact that cost of production is necessarily related to the past as well as to the present and future. It constitutes an imperfect recognition of the necessary continuity in the life of the plant and its service.

The fallacy in the reproduction method is due to a failure to realize the effect on cost determination of a fixed investment of capital. If a public service could be supplied without a fixed investment it would be true that cost of production could be determined without reference to the past. But these utilities cannot be supplied without a large capital outlay that cannot be withdrawn at will and upon which a certain risk has been assumed in anticipation of an assumed probable return. As the utility can be supplied only in this way the actual cost of production cannot be determined without reference to these actual conditions. Cost of production determined by the reproduction method is largely hypothetical. It is not based on the actual conditions that limit the production of the utility.

Take the railroad industry. Some billions of dollars have been permanently devoted to this great public service. This capital cannot be withdrawn. The railroad is a fixture. It has created and molded the entire industrial and social development; the location of industries, population, cities, has for the most part been controlled by this factor. It is utterly impossible to conceive of our present social and industrial organization without the railroad. The reproduction cost theory as applied to such an institution is particularly fanciful. How can real cost of transportation be held to change from year to year with the changing reproduction cost of the railroad right of way and terminals? If railroads were in fact entirely reconstructed each year there would be reason in this method of cost determination. But they are not and cannot be constructed and operated on any such theory. The real cost of transportation can only be determined by recognizing the only process by which transportation service can be supplied, that is by devoting capital permanently to the enterprise.

The reproduction method does not fit in with depreciation and accounting methods. The annual allowance for depreciation under approved accounting methods is not the amount required to replace the existing unit, but the amount required to write off the cost of the existing unit when it is necessary to replace it. Under approved methods the actual cost of a car when replaced is deducted from the capital account, and the cost of the new car is added to the capital account. An allowance for depreciation estimated on reproduction cost is consequently inaccurate in proportion as the reproduction cost differs from the actual cost. As long

¹J. E. Willoughby in *Proceedings of American Society of Civil Engineers*, January, 1911, p. 119.

as the science of accounts is predicated on actual cost it is inconsistent and confusing in any proceeding to determine cost of production, to base either the accrued depreciation or the annual allowance for depreciation, on reproduction rather than actual cost.

The determination of a normal capital cost is one step in the process of determining a normal price, and this normal price is the amount which in the long run it is necessary to pay to secure the utilities demanded by the public. It is the amount which constitutes an adequate inducement for investment. Starting with the necessary investment as a base the investor will estimate all the risks and hazards of the business of every kind and nature, and against this will place all the possible chances of profit. The possible rate of return adequate to induce investment is naturally and necessarily a percentage on the actual cost. From the standpoint of the investor, a rate of profit based on any amount that is less than the actual cost is in excess of the actual rate of profit, and a rate of profit based on any amount that is greater than the actual cost is less than the actual rate of profit.

Assume, for example, that a possible annual return of 7 per cent on the actual outlay is reasonable and necessary to secure the establishment of a given public utility. If, however, the annual return is to be based not on actual outlay but on estimated reproduction cost in each year, 7 per cent will be more or less than a reasonable return in proportion as the chances favor an increase or a decrease in reproduction cost. If costs of land, labor and materials are advancing and all indications point to a continuance of such increase, a return of 7 per cent on such increasing cost is more than is reasonable and necessary to secure the establishment of the given enterprise. If, on the other hand, all indications point to a continuous fall in the cost of land, labor and materials, the prospect of a return of 7 per cent on such decreasing cost would not be adequate to secure the establishment of the enterprise. To furnish an adequate inducement, either the probable rate of return would have to be increased or the cost of reproduction standard of determining capital cost would have to be abandoned.

The fair rate of return could be altered so as in a measure to offset the appreciation or depreciation of the base to which such rate of return is applied. With declining prices the risk of depreciation in reproduction cost would be offset by an increase in rate of return and with advancing prices the probability of appreciation would be offset by a decrease in

the rate of return. This, however, is but a poor method of accomplishing what can be more fairly and logically effected by directly basing the rate of return on actual capital cost. Any method that is permanently fair to both parties must get back to actual capital cost as the base for actual as distinct from nominal profits.

It is a fair assumption that, in general, investors in establishing public utilities have looked to a fair return on their actual investment to compensate them for their outlay, and have not taken seriously into account any appreciation or depreciation in the value of land or in the price of labor and materials entering into the reproduction cost of structures and equipment. They have necessarily assumed that they would be able and would be permitted to receive for their service an amount equal to their actual cost of production, *i.e.*, operating expenses, depreciation and interest and profits on their actual capital outlay.

The public utility renders a continuous service and in doing so requires a permanent fixed capital. Both the plant and the business are a gradual growth. This essential continuity of growth and service is the fact that seems to be lost sight of in present moment reproduction methods of determining cost of production. The service and its present cost are the result of a complex interplay of factors starting with the initiation of the enterprise. Such cost is as much the result of past life and growth as it is of present conditions. Investment, depreciation, operating costs, risk, are all bound up in the past growth and development of the existing utility.

The normal actual capital cost as a basis for rate determination moreover has a distinct advantage from the standpoint of public policy. It is desirable that rate schedules should have stability and should not fluctuate with the price of iron pipe or copper wire or with real estate activity or reactions. A utility is not established for the purpose of speculating in copper wire or iron pipe or land. It must, however, in furnishing its service invest its money permanently in these things. The utility should not be expected to assume the risks of fluctuations in the price of the land and materials it uses. The public interest is best subserved and the cost of production is lowered by reducing the risks incident to public utility enterprises. The tendency of modern public service regulation is to establish more definite and equitable relations between the public and the company. These more definite relations mean decreased risk and decreased risk means decreased cost of production.

FAIR VALUE IN PRACTICE

BY EDWARD P. BURCH

Consulting Engineer, Detroit, Mich.

In a discussion of fair value the engineer has always taken second place, one behind the economist. This status will probably continue, because the basis should precede the presentation of facts. The economist and the attorney and the courts have not to this time furnished an accepted basis for valuation work. But in the meanwhile the engineer is called upon for the facts and all the facts on the estimated cost of property.

The estimated cost obtained by different engineers who appraise the same property, sometimes varies 10 to 50 per cent, or more, simply because widely different bases are used. The matter is heralded, and the engineers' results may be discredited.

The engineer's attitude, however, is normally without bias. He is required to obtain and present scientific facts. Inventories, prices and depreciation are to be set forth for each item of a property. This work requires a judicial attitude and the finding of facts on what appears to be an equitable and consistent basis.

It is a matter of common knowledge, however, that economists are not agreed on the application of their own theories to valuation work; also that attorneys are usually biased, one-sided advocates.

It is not possible at present for engineers to work directly for the courts. But it is possible for the engineer to present scientific and intelligent facts, and all the facts, without being dictated to by outside influences. He can present an unbiased attitude and establish an ethical basis. Usually that basis considers the real sacrifice of the intelligent investor.

The practical application of this basis for valuation work must be made the study of the engineer. When appraisal totals differ, the reason is not in bias, but in basis. To outline three simple cases:

1. The company, it was found, did not cut out the paving over its watermains and conduits, because there was no paving when they were laid. Yet under present reproduction conditions, the paving would have to be removed before similar mains or conduits could now be laid. But the mere assumption of reproduction conditions gives no basis for values from an ethical standpoint.

2. The company, it was found in another case, did lay the paving now found between the track rails. The records show the fact. Then, under the engineer's basis, the fact that the company paid for the paving is sufficient to warrant the inclusion of the track paving in the inventory.

3. The company, in a common case, laid its own tracks,

with its own men and tools, under the direction of its own engineers. The addition of a 10 per cent profit for a hypothetical contractor who did not furnish men, tools, or supervision, is then mere fancy and an injustice.

The real sacrifice of the investor makes a rather certain basis and it is the engineer's duty to forget the lawyer's contention and find out whether the company did or did not make the investment or sacrifice.

Objection has been made to any plan which allows the engineer to decide these valuation questions. Is that a fair proposition?

The engineer with his staff of subordinates expends months obtaining first-hand, complete and systemized information for the inventory, for the unit prices, and on the extent of the depreciation. How much time or thought does the economist or attorney spend on the same proposition?

The engineer not only reads the court decisions, but studies them, trying to apply them to his purchase, condemnation, or rate case. To every hour spent by engineers on the valuation records of cost of reproduction less depreciation, the attorney or the economist spends minutes or seconds. Yet the attorney in a valuation case, fortified with parts of 20 decisions for, and 19 or 21 decisions against a contention, may easily forget the application of ethics, equity and actual sacrifice.

The engineer desires a final ruling on the long pending discussion on whether original cost less depreciation, or cost of reproduction less depreciation is to serve as the amount on which rates shall be based.

Original cost, however, can seldom be known, and can be estimated only by secondary estimates based on the cost of reproduction. This is because of bad or incomplete records of accountants. The reproduction basis in the hands of experienced and fair appraisers usually results in an amount which is higher than that shown by original cost.

The basis for valuations is not fully settled, but conscientious effort can be made to base estimated cost on items which represent the real sacrifice of the investor. Systemized knowledge can take the place of guess-work. The engineer can make an inventory which is accurate and definite; complete as to general charges yet free from hazy assumptions; the items in the inventory can be multiplied by normal unit prices; and the products can be depreciated fairly for wear, decay, obsolescence and inadequacy. The sum or amount then found represents, as accurately and definitely as the state of the art permits, the principle factor on which rates may be based.

OPEN DISCUSSION

PROF. JOHN H. GRAY, *University of Minnesota, Minneapolis, Minn.*:

I would like to ask Mr. Anderson a question. Mr. Anderson suggests that no case has gone up from Massachusetts to the Supreme Court of the United States; that on the method of valuation Massachusetts has taken the original cost for many years; and he predicts that if a case ever gets to the United States Supreme Court, the Massachusetts position will be upheld. I want to ask if he thinks such prediction can be reconciled with the doctrine of the Massachusetts court as laid down in the *Fall River Case*, *Fall River Gas Works Co. vs. Board of Gas and Electric Light Commissioners*, 214 Mass. 529, May 23, 1914?

MR. ANDERSON:

It is a long while since I read the *Fall River Gas Case*; but it does not occur to me that the principle there enunciated has any bearing on my main contention that the legislature—national or state—may constitutionally determine the basis upon which aggregate result of rates shall be determined. The *Fall River Gas Case* turned entirely upon the construction of our statutes: The Gas Commission refused to approve an issue of stock to pay debts because the company had accumulated out of earnings in excess of its regular dividends of 10 per cent or 12 per cent a sufficient sum to pay for the improvements for which the debt was incurred, if a special dividend had not been declared. On the record before the court it was held that this ruling was as a matter of law wrong. I have two comments to make on that decision:

(1) I think on the record before the full court that the decision was wrong; that the reasoning does not satisfy.

(2) But if the decision was not wrong on the record, on another record which might properly have been made, I am confident that our court would have come to the reverse conclusion.

That case, like very many decisions of the Supreme Court of the United States, has been much misunderstood. It has very little bearing upon the general question of the right of the American people, through their national and state legislatures, to determine the fundamental policy which shall control the relations between rate payers and investors. There is nothing in that opinion, be it right or wrong, which indicates that the legislature might not have constitutionally done what the Gas Commission held they had done.

I therefore answer Professor Gray's question by saying that the Supreme Court of the United States will never be called upon to reflect the principle of the *Fall River Gas Case*.

MR. F. W. STEVENS, *General Valuation Counsel, New York Central Lines, New York City*:

I have been impressed by the fact that the cost of reproduction seems to have very few friends here, among the speakers. And it would seem, from the two papers read,

that I have taken a shy at it, myself, in the past. I have nothing to retract or withdraw from any attacks I have made upon it, because I believe that they were properly made; but I have been further impressed with the prevalence of the idea that it is unethical and that apparently it was conceived in sin and born in iniquity to perpetuate outrages upon the public.

We hear at the present time considerable about the historical method. Will some gentleman please tell me when, where and how it was first brought into these controversies? Does anybody know anything about who brought it there? I have spent many weary hours and labored assiduously for a great many years, to find out something about that. I cannot say that what I am about to detail was the first introduction of this element into rate making controversies; but it is the first I ever heard of, or have known of. It was first introduced in rate making controversies by the representative of a sovereign state of the Union, and upon purely ethical grounds. If you will consult *Smythe vs. Ames*, you will learn that the Supreme Court of the United States declared that the State of Nebraska had taken an action in its legislature which was distinctly unethical, to wit: it had taken action which would confiscate the property of the railroads of that state. I know nothing about it only what the court said. In an effort which was made by the railroads to set aside this act of the legislature, the late Secretary of State of the United States, whose conduct, as we all know, and whose disposition are always based upon the purest ethical principles appeared for the State of Nebraska; and he contended there, upon the strength of those principles, that if the legislature allowed any return, no matter how small, to the investors in the railroad, not upon the cost, not upon the investment, it was but a matter of state policy with which the court had nothing to do; but he said, "If this is not the law, then I say to you that the return which should be allowed, should be upon the cost of reproduction"; and that was the contention made by the State of Nebraska; and what are the ethics of it? If you will refer to his argument, you will find it was put upon a purely ethical ground, as I said before; and that was, that the railroads had cost something over \$30,000 a mile but they could be reproduced at that time for \$20,000 a mile.

One more remark. I find myself placed in a very embarrassing position here, and I doubt whether what I am about to say I should say, or not; but in the moment's reflection that I have given to it, I feel compelled to say this: in the paper of Professor Bemis, I find myself quoted, in connection with another gentleman, as in favor of the cost basis for the rate making function. I wish to say that if the gentleman had done me the honor to read all of the decisions which I have made, that he would have discovered that—while I now stand for every word which I said in the *Buffalo case* and the *Cataract case* and the *General-Electric case*,—that I am not now and never have been in favor of the principle

which he advocates: that rates should at all times and all places be based upon cost.

My personal opinions are of no consequence; but, having been quoted in that connection, I wish to say distinctly that I do not believe that it is workable, that it is possible, or that it is just, in large numbers of cases: in some cases it is absolutely right. This is a personal explanation, made to avoid any misapprehension whatsoever as to my position.

MR. F. P. STEARNS, *Consulting Engineer, Boston, Mass.:*

The discussion this morning has to do with the actual cost basis in valuation, but has extended to a discussion of the relative merits of actual cost and reproduction cost.

I am heartily in accord with the view that actual cost rather than reproduction cost ought to be the basis for the future, with proper legislation and under commission control. Under such circumstances results which are fair to the owner of the property and to the public can be attained.

In dealing with old properties, large parts of which were built many years ago, it is frequently not possible to obtain the actual cost, and it may also be inequitable to use it if it could be obtained. Equities may have developed in the meantime which may make the use of the actual cost basis unfair. For instance, I have known the case of an old utility where the rates gave an inadequate return upon the investment in the property, and the only way in which the company received a fair return was through the appreciation of its large investment in land. The appreciation of the land, plus the amount received for rates, gave it a fair return. To value the property at the present time at the original cost of the land would give unfair results.

Coming to the subject which I wish especially to discuss, namely, the proper conception of reproduction cost, I note that everyone who has referred to the subject has spoken of reproduction cost as if it were necessarily the cost of reproducing a property under the conditions existing at the present time. I recognize that this is the prevailing view and that it conforms with the definition given by the courts, but it seems to me to be an incorrect view and one which is responsible for many of the irrational features of the reproduction theory.

A more rational conception of reproduction cost is the reproduction of the property as it was produced; that is, under the physical conditions originally existing.

Mr. Knowles, in speaking last night, commented favorably upon the view of the Wisconsin Commission that every effort and every element which entered into the development of a property should be considered in determining its actual cost, and in the same way I believe that every effort and every element which entered into the cost of a property should appear in its reproduction cost, but that there should not appear also the cost of property built by others without any effort or expense to the company; nor should there be omitted from the reproduction cost those efforts and elements of cost which entered into the development of a property because, owing to the action of others, the property could be reproduced under the conditions existing at the present time with less effort and cost.

The example most frequently cited of an increase in reproduction cost under existing conditions is afforded where a water or gas company has laid a pipe in an unpaved street which has subsequently been paved by a city, and the increase in cost, due to work performed by others, is represented by the cost of taking up and replacing the pavement, an operation which clearly would be necessary under existing conditions.

The most common example of a decrease in reproduction cost under existing conditions is afforded in many instances in the far west where dams, reservoirs, hydro-electric plants and other utilities have been built far from lines of transportation and subsequently have been provided with nearby transportation through the efforts of others. In such cases the reproduction cost under existing conditions is greatly decreased through improved transportation facilities for which the owner of the dam, reservoir or hydro-electric plant is in no way responsible.

The highest court has decided that paving laid by a city after the pipes are laid by a company does not increase the value of the pipe, even if it does increase the reproduction cost under the usual definition. If the reproduction cost were determined upon the basis of the original physical conditions, the court would not have to make a distinction between value and cost in such a case.

When one takes into consideration various kinds of public service properties, hundreds of instances may be found in which the use of existing conditions in determining the reproduction cost produces results which do not represent value, under the principle enunciated by the courts in the case of paving, and this necessity for making a distinction between value and cost would disappear if the reproduction cost were determined under the original physical conditions. This method offers a greater protection to the actual investment and prevents the inclusion in cost of unearned increments and decrements.

It is reasonable to assume that the original conception of reproduction cost related to the reproduction cost of an existing structure, as, for instance, a building, and the question arose as to whether such a building would cost more or less under the prices of labor and material at the date of valuation.

Under modern conditions the problem has become much more complicated. Great properties are created at the present day by destroying vast amounts of existing property, as, for example, in the construction of the great water works reservoirs of New York and Boston. In such cases mills and water rights were destroyed, towns were wiped out, railroads and highways were relocated, and under recent legislation not only was the builder of the reservoir required to pay compensation for physical property destroyed, but also to pay incidental damages to people who could not claim damages under the common law. It is recognized in these cases that the destruction of mill and other kinds of business affected the employees who lost their positions and those who owned land and did business in adjacent

territory. These incidental damages due to the destruction of business amounted to large sums.

If one were to ascertain the reproduction cost of such properties under conditions which now exist, there would evidently be no business or mills or water rights to destroy, and one who follows strictly the reproduction theory under existing conditions would necessarily omit large and proper costs for these purposes in making his estimate.

As a matter of general practice, those who nominally base their estimates of reproduction cost upon existing physical conditions do not adhere to the theory, but inconsistently use the original or historical conditions and include a large amount of cost which would be excluded if the existing condition theory were strictly adhered to.

As a simple example of the inconsistency of the ordinary practice of ascertaining the reproduction cost under existing conditions, let us suppose that a water or gas pipe has been laid in a street before it was paved, and assume further that the street is composed of rock. When the work was originally done the original cost included the blasting of a trench in the rock, the laying of the pipe, the refilling of the trench with earth, and the resurfacing of the street. Let it be assumed that before the time for estimating the cost of reproduction the surface of the street has been covered with a modern pavement. Under the conditions existing at the time of estimating the reproduction cost, it would be necessary in order to reproduce the pipe under the existing conditions to cut the pavement, dig the earth from the trench, place the pipe, refill the trench with earth, and replace the pavement. That would be the actual process if the pipe were to be replaced at that time.

In accordance with current practice, the estimator figures the cost of removing and replacing the pavement. Then, instead of being consistent and estimating the cost of excavating and replacing the earth, he resorts to the historical conditions and estimates the cost of excavating the rock and refilling the trench with earth.

It is not only in connection with the physical property that the use of the original physical conditions in determining the cost of reproduction will produce equitable results, but the use of original conditions will also produce equity in connection with the overhead charge for interest during construction and the less tangible cost of developing the business.

Under the original conditions, in the case of a property which has started from a small beginning, there would be the interest during construction for about half the period occupied in the building of the original works; then, as the property grew by the addition of small parts which were put into use as soon as finished, as, for instance, the additional pipes laid in streets to supply a growing town or city with water, there would be the interest during the comparatively short construction period required for each of such additions. Equitable treatment requires that the owners of the property should be allowed interest during construction only for the time properly attributable to the construction of the various parts of the works. There may be large additions to a

property, requiring many years for their construction, and whatever the historical period may be for such construction, a similar period should be allowed in determining the interest during construction for that part of the property.

When the interest during construction is determined under existing conditions, it is the usual custom to deal with a hypothetical period for reproducing the whole of an existing property at one operation, and the result, as a rule, is to greatly lengthen the time of construction for which the interest should be computed, thereby furnishing an increment of interest which has no counterpart in a property which has been built up from small beginnings.

The same reasons which require the use of original conditions for determining the time to be allowed in determining the interest during construction also require the use of original conditions in determining the cost of developing the business, but I will not elaborate this feature as I have already taken too much time.

HON. JOHN M. ESHLEMAN, *Formerly President of California Railroad Commission:*

I think the force of some of the ideas that have been presented here has not been appreciated. No one has said that the historical method of reproduction is unethical. Some of us did say, however, that, to take that as to a part of the property and reject it as to another important part is not only unethical but inconsistent; and the historical method of reproduction is never carried out—never has, in my experience, been carried out consistently by the engineers or by the representatives of the utilities. In other words, what we are complaining against, is their desire to know history when history will do something for them, but to forget history with reference to lands and things of that sort where there has been a great amount of appreciation. Just exactly this inconsistency runs through all the valuations.

Now the suggestion that this theory came from representatives of the people, I think is more or less correct; and the distinguished gentleman who first advocated it agreed it had some evils. That doesn't make it any more logical or binding upon me than it does upon him. I think, in frankness, we ought to say that there has been a desire on the part of some people representing the public to adopt this method because they thought it gave them the best of it; and there has been a desire on the part of some general utilities to adopt it now (although they protested strenuously against it originally), when they find it gives them the better of it.

I think that cost, the measure of what was sacrificed, should have a great bearing upon the amount upon which returns are to be allowed.

MR. STEVENS:

It is always an ungrateful task to explain what you mean. My remarks regarding the origin of the reproduction theory were really directed at just one point, which I consider the

weakness of the whole discussion, so far as I have heard it. The argument is, that the rates should be based upon some ethical theory. Correct, I agree. The trouble is, that there is no agreement upon what the ethical basis is—any more than upon the definition of the word “value.” There is no basis of ethics which is universally adopted or agreed upon; and when you say that you want to put it upon the ethical theory, you simply get into the quagmire and the bog of discussions without end.

I want to call attention to just one fact further (if you will pardon me), which I should have cited before. Lately there has been a red lantern or a red flag, waved by day or by night as the case might be, over the fact that the public would get no services from the railroads if the appreciation in the value of the lands was allowed, because the rates would get so high that nobody could pay them. That is the language, almost exactly, of Commissioner Thelan of California.

Now the difficulty that I find with some of these matters is that theories don't agree with facts. The talk, the reasoning, the logic of the thing do not agree with the exact facts we find in the world outside. Land has been appreciating in value in this country for a good many years. I simply ask the gentlemen to draw upon the same sheet of paper, curves (as I have done) showing what the increase in the value of land has been; and you will find it would be going up—continually going up. If upon the same sheet of paper you will draw the line showing what the cost of transportation has been, the curve is going down.

Now, when the first road went through so that there was rail connection from New York to Chicago, what was the rate per ton-mile? In 1854 you will find it was three and one-half cents per ton-mile. Land was cheap. In 1910, over the same road, the average cost per ton-mile for freight was 5.23 mills per ton-mile. Land was high. Something has been forgotten in the calculation; what is it? I have not the density of the traffic in 1854; but upon one of the principal roads leading from New York to Chicago—I refer to the Lake Shore & Michigan Southern—the density of traffic in 1870, when the rate per ton-mile was $1\frac{1}{2}$ cents, was 566,635 tons. In 1910, when it was half a cent per mile, the density of traffic was 4,055,517 tons.

MR. ROBERT L. HALE, *Lecturer in Economics, Columbia University*:

Any fair-minded person who has listened to the discussion must be convinced that actual cost, not reproduction cost, is the amount on which a fair return should be allowed on future investments. If we can warn people not to pay more for stock than actual cost—warn them that earning capacity value will never be allowed to get ahead of actual cost, then we shall avoid the dilemma we now have to face as to existing investments. In the case of existing investments where we have permitted the exchange value to grow beyond actual cost, it is often impossible to distinguish between those stockholders who invested at actual cost and those who bought their stock later at the advanced value—the “widows and orphans,”

in other words. To do justice to the “widows and orphans” it would be necessary to make the consumers pay unfairly high prices to the holders of stock who paid only the actual cost for it. We shall have to work hardship on one of two innocent classes of persons—the “widows and orphans” or the consumers—unless, indeed, we make the taxpayer bear this burden. Unless we adopt this last course, the best we can do is to find an arbitrary amount for each existing company, between the actual cost as the lower limit, and the present exchange value as the upper limit. Whatever figure is adopted between these limits can be objected to, but some figure must be taken. Having taken it, we can treat the future as an entirely separate question and can warn the widow and the orphan never to buy stock at any figure above what we have adopted—unless additional cost has been incurred since the time when we adopted our arbitrary figure. In that case, we can make it known definitely, through control and publicity of accounts, just what additions will be allowed. In the case of companies started after the warning has been given, it can be known definitely in the same way what the actual cost is at any time, and known that earnings will not be permitted which would increase the market value beyond this actual cost. To bring about this separate treatment for the unwarned past and the warned future will require a statute. Without such a statute any attempt to prevent the private appropriation of unearned increments will meet the opposition of those who feel sympathy for the widows and orphans class. By being generous to that class, while at the same time preventing it from increasing, there will be much more chance of getting future increments for the public, otherwise regulation will be a failure.

O. F. GAYTON, *Valuation Supervisor, Chicago, Ill.*:

It seems that we are rather inclined to decide that the figure a city should base the rates on must be determined by a method of past cost rather than any other method. In this connection I wish to call your attention to certain legislation of the State of Pennsylvania.

Back in 1874 a law was passed under which a city must pay the past cost in order to purchase a public utility plant. In the case of a certain waterworks in the State of Pennsylvania the figure arrived at (which was a million dollars larger than the actual value of the plant), was so high that the city could not think of purchasing the plant as high enough rates to pay ordinary interest on the figure determined by past cost could not be charged.

DR. BEMIS:

I had to omit a good many quotations; and in my reference to Mr. Stevens I omitted certain full extracts that I was referring to; or I think he would not have thought that I did any injustice to his position in those famous cases in Buffalo, and still held by him, he says, as to the weakness of the reproductive theory. As to his second argument, that the land has risen in value and railroad rates have fallen, there is no doubt of it. But that does not interfere with the proposition: that if the present value of

the land is taken in this valuation work, it will simply mean a much higher value than is generally realized and will be considered a justification for much higher rates than are now being charged. The situation is very threatening.

MR. ANDERSON:

A single word in closing: Mr. Bemis' spaper and the discussion, to my mind, but lend emphasis to what I have already in substance said,—the hopeless absurdity of finding any sane and workable basis for rates in any possible

definition or description of "fair value of the property used." Archimedes said that if he could find a $\pi\omicron\mu\ \sigma\iota\omega$ he could move the world. You will find no $\pi\omicron\mu\ \sigma\iota\omega$ for rate making within "fair value of the property used" or reproduction cost. There will be no motion towards a sane and workable rate making theory until we cut entirely loose from our absurd reasoning in a circle and ground our theory upon the real basis of the origin and increase of privately-owned utilities, to wit,—the contributions of the investing public.

PRINCIPLES AS TO FRANCHISE VALUES

BY DELOS F. WILCOX, PH.D.

Consulting Franchise and Public Utility Expert, New York City; Deputy Commissioner, Department of Water Supply, Gas and Electricity

AT THE outset of the discussion, we ought to clear up one confusion that still lingers to plague appraisers. Under the stress of public regulation, the protagonists of vested rights have discovered many new elements of value in public utility properties. In this matter danger, if not necessity, has been the mother of invention. At the present time we need to fear, not that some elements of value will be overlooked, but that the appraiser's eye, after being shown the multifarious riches of the public utility world from the top of a high mountain, will see double. In considering franchise values, we must not forget that the first and principal function of a franchise is to give life and value to the physical property. A franchise is needed for this purpose because without it the physical property itself is a trespasser. In public utilities, therefore, a franchise is needed to give the physical structures a value which, in purely private enterprises, they would have without a franchise. It is absolutely unsound to assign to the franchise great value on the ground that without it the physical property would be scrap, and then, on top of this valuation, to allow full going value to the physical property as if without the franchise it were not scrap after all. This is sheer duplication and is inexcusable for any purpose whatever.

While it is much to be desired that the principles of valuation should be made as nearly uniform as possible so as to reduce the existing chaos in valuation matters

to a minimum, yet for the present it is impracticable to apply strictly uniform principles to valuations for such widely different purposes as, (1) taxation; (2) rate-making; (3) condemnation; (4) involuntary sale; (5) voluntary purchase; and (6) capitalization. Taking up these several purposes *seriatim*, we may consider the principles as to franchise values, giving due consideration to the character, duration and terminability of the franchise in each case.

PART III

FRANCHISE VALUES

PRINCIPLES AS TO FRANCHISE VALUES FOR

TAXATION

RATE MAKING

CONDEMNATION

INVOLUNTARY SALE

VOLUNTARY PURCHASE

CAPITALIZATION

LEGAL VS. ADMINISTRATIVE PHASES OF FRANCHISE VALUATION

1. FRANCHISE VALUES FOR PURPOSES OF TAXATION

It is now well established that it is admissible to tax franchise values whenever and wherever they exist, without reference to the possibility of their being reduced or destroyed in the future, whether by expiration, by regulation of rates and services, by decrease in demand, by increase in expenses, or by other causes. It is to be noted, however, that in establishing a value for taxing purposes, when the tax is first imposed, if the taxing officials assess the franchise at its full market value as untaxed property, the imposition of the tax will automatically reduce this value and thereby reduce the assessment for the succeeding year and thereby reduce again the amount paid in taxes, which in turn will have the effect of giving back a portion of its original value to the franchise. This oscillation can be prevented if the effect of the tax is discounted in advance.

It may be that a franchise is worth much less than

it originally cost, or, indeed, much less than it would cost to "reproduce" it. Present value for taxing purposes is not to be determined either by actual cost or by assumed reproduction cost. The most widely accepted method of ascertaining franchise values for taxing purposes is the so-called "net earnings" method. From the gross earnings of the corporation are deducted, first, operating expenses, depreciation and taxes and, second, a fair minimum rate of return upon the value of all the physical property used and useful in rendering the service. Whatever is left represents the earnings of the franchise and, if capitalized, will represent the value of the franchise. Thus, the value of a franchise for taxation purposes is to be determined primarily by its earning power, which, in turn, usually is the main factor in establishing its market value.

One limitation upon the net earnings method of determining the value of a franchise for taxation purposes should be noted. Speaking generally, the present value of the land used and useful in the operation of a public utility is to be taken in determining the value of the physical property upon which a fair return must be allowed out of earnings before getting the net earnings of the franchise. It appears, however, that if for any reason the present value of the land, as distinguished from its cost to the owner of the utility, has become so great as to make it out of all proportion to the value of the plant as a whole, especially if by a readjustment cheaper lands could be had suitable for the purpose, somewhat less than the full present value of the land may be taken.

In New York a secondary franchise is defined as the right to occupy public streets with fixtures. This right is classified as real estate. It is an easement—one of the elements isolated and taken out of the aggregate value of the land in the public highways. The pipes, wires, conduits, tracks and other public utility fixtures located in the streets are also real estate, corresponding to buildings and other improvements on land. The right and the fixtures together constitute the "special franchise," which is taxed as ordinary real estate, but is assessed in a different way. In New York, therefore, when we speak of the principles of franchise valuation for taxing purposes, we are sure to be misleading unless we are very precise. While it seems to be the theory of the state board of tax commissioners that the value of the "special franchise" should never be less than the present value of that portion of it constituted by the physical structures, it nevertheless frequently happens that the assessment of the intangible right plus the tangible improvement of such right is less than the reproduction cost new less depreciation of the improvement alone. Under such conditions it might be said

that the franchise—the intangible right—is worth less than nothing for taxation purposes.

An important factor in the determination of the value of the franchise for taxation purposes is the question of its duration. It is clear that its duration does not directly affect the earning power of a franchise at the particular moment when it is assessed for taxation. The effect is indirect. Under a perpetual franchise, or under an indeterminate or a limited term franchise that provides for the purchase of the physical property by the governmental body in lieu of the continuation or renewal of the franchise itself, with the security to the investment resulting from these conditions, the rate of return to be allowed as fair and reasonable upon the value of the physical property will be lower, and the net earnings attributable to the franchise itself will be larger. It is clear, therefore, that for taxing purposes, even under the net earnings theory of valuation, a franchise is worth more in proportion to its assured duration or in proportion to the security it gives to the investment in the physical property. Of course, if the franchise, in addition to other forms of security, establishes the corporation's right to charge certain fixed and highly profitable rates for a definite term of years, that fact will also tend to enhance the value of the franchise itself. If, on the other hand, the rates are fixed for a definite period at a point so low as to make them increasingly unprofitable, as the business develops, as, for example, in the case of a telephone system in a rapidly growing city, then this element of fixity will tend to decrease the value of the franchise by enlarging the rate of return which the corporation for the present is entitled to earn, if it can, upon the value of its physical property. Except, however, as the duration of the franchise or the terms and conditions under which it is held affect the security of the property itself or the security of its earning power, and thereby decrease or increase the fair rate of return which the corporation has a right to demand, the value of the franchise, if measured by the net earnings theory, will not be affected by the duration of the grant or by the fixity of the rates. Indeed, even though the rates charged are subject to revision and control by the public authorities, and even if the rates which the company is charging at the moment of the valuation for taxing purposes are excessive and likely to be reduced, nevertheless the value of the franchise at that moment is to be determined by its earning power under the rates actually charged, and will not be affected by the possibility or even the probability that rates will be reduced by the public authorities in the future. It is the theory that any possible reduction of rates through the exercise of the rate fixing power of the state does not in any degree render the investment itself unsafe or add an element

of danger as to the probability of the corporation's continuing to earn a fair return. In fact, the imminence of regulation, even though its immediate manifestation is likely to be in a reduction of rates, gives a certain promise of security and stability to the property and especially to its earning power, which naturally tends to lower the rate of return and thereby to enhance the value of the franchise. Thus we see that for taxing purposes a franchise under which high rates are charged is to be valued on the basis of these high rates, and if the corporation stands a good chance of being compelled to reduce its rates by public regulation, then this very fact will tend to give an additional element of present value to the franchise, for, with a regulation of rates, goes an express or implied protection against competition, while high rates without regulation are a continuing invitation to competitive undertaking.

It should not be forgotten that one of the most important factors in the consideration of the safety of the investment and the certainty of its earning power is the exclusiveness or non-exclusiveness of the franchise. In some instances franchises are absolutely exclusive. In others they are practically so, as the grantee is given the first choice for all extensions and the only penalty for failure to take the extensions is the loss of the exclusive right to them. This loss is usually of little importance if the extensions are not worth taking when offered. Furthermore, in those states where a public service corporation or a municipality desiring to establish a competitive service has to get from a state commission a certificate of public convenience and necessity, and where, in practice, the state has committed itself to the policy of regulated monopoly, these conditions themselves establish exclusiveness of existing franchises in a somewhat mild form.

2. FRANCHISE VALUES FOR PURPOSES OF RATE MAKING

No more important or more critical decision, so far as the theory of rate regulation is concerned, has been reached in any litigation than that which marks the final stage of the Passaic Gas Case in the courts of New Jersey. In December last, the highest New Jersey court reversed the Board of Public Utilities and the lower court and decided that in determining the valuation of the gas company's property for the purpose of fixing rates, a separate and distinct allowance should be made for the value of the company's franchises. If this decision had been allowed to stand, it would have meant that in New Jersey, at least, rate making would be a beggarly business. If, as was pointed out in the arguments on the rehearing, the value of the franchise is determined in large measure by the rates which the corporation charges, and if this value in turn must be

added as a separate element to the valuation of the physical plant in determining the investment basis upon which the corporation will be entitled to earn a fair return, then a reduction of rates by public authority will be clearly impossible, and in fact, a continual increase in rates up to the point where the corporation collects all the traffic will bear or to a point where the rate is inherently unreasonable in relation to the value of the service rendered, will be a logical necessity. This is especially true where the rate fixing authority is at all liberal in determining the fair rate of return to be allowed on the investment. For if a return of 8 per cent, for example, is allowed on a valuation which includes, let us assume, \$1,000,000 for the franchise, then straightway the franchise, with this guaranty of an 8 per cent earning power, will be greatly enhanced in value. The same process will go on indefinitely with every revision of the rates, and the exercise of the rate fixing power will be nothing but a steady climbing of the Golden Stair, or Jacob's Ladder, if that is preferred.

Fortunately, upon the rehearing, the New Jersey court of Errors and Appeals, thanks to a change in the sitting membership, reversed itself and its earlier decision and sustained the valuation placed upon the gas property by the Board of Public Utilities, in which no separate allowance was made for franchise value. It has been announced that the Public Service Gas Company will appeal this case to the United States Supreme Court, but if it takes such action we may reasonably suspect that the company is more interested in getting a backhanded confirmation by the highest court in the land of the extraordinary allowances made for going value in the New Jersey case, than it is hopeful of inducing the Supreme Court to sanction its preposterous claims as to franchise valuation for rate purposes.

It is true that the astute counsel representing the great public service corporations try to make a good deal out of the Supreme Court's hybrid decision in the Consolidated Gas Case. That was a special case and the court, in a celebrated *dictum*, said that the State of New York could not now question the valuation placed at the time upon the franchises of the constituent companies which together formed the Consolidated Gas Company, this consolidation having been effected in accordance with the terms of the statute authorizing the consolidation. The court stated that the city could not deny the company's right to earn a fair return upon the value of its franchises as measured and capitalized under state protection, but it likewise stated that to allow an increase in this value in a rate case would be subversive of fundamental legal assumptions.

It may be considered as reasonably well settled in the courts that in a rate proceeding no separate and distinct value need be assigned to the corporation's franchises

except in those peculiar cases where these values have been measured and capitalized by authority of the state itself. Specifically and definitely, the fact that the state has valued the franchises for taxing purposes has no significance in a rate case, for, as the courts hold, rates are subject to revision, while for taxation purposes present values may be assessed wherever they are found, without reference to what may become of them in the future. If the rates are reduced and the franchise values shrink, then, naturally, when the next assessment for taxation is made, the valuation will be correspondingly lowered.

Two points of special difficulty arise in this connection. Under a franchise by which the rates are fixed for a definite term of years by agreement between the municipality and the grantee, we are saved the trouble of laying down principles of valuation for rate making, inasmuch as the rates are fixed and no rate regulation is possible. This statement requires serious modification, however. While the courts will hold, as in the Minneapolis Street Railway Fare Case, that the municipality itself is bound not to reduce rates fixed by the franchise contracts, they will also hold, as they have done in Wisconsin, in Washington and in New York, that rates fixed by contract between the public service corporation and the municipality are not immune from regulation by the state unless the municipality, when it entered into the contract, had been delegated specific authority by the state to fix the rates by contract for a definite term of years. It appears that the recent trend of decisions is against the assumption that rates established by a franchise lie outside the pale of state regulation. In other words, the courts tend to keep available wherever possible the authority of the state under the police power to enforce reasonable rates for public utility services.

The other point of difficulty in the valuation of franchises for rate purposes relates to the question of compensation originally paid by the corporation or its predecessor to the municipality in consideration of the grant of the franchise. From this point of view it may be considered fortunate that the cases where public utilities have paid lump sums of any importance for their franchise rights are comparatively rare, and so this difficulty, though important in its principle, is a minor one in practice. However, the problem needs to be solved. It may, perhaps, be said that where the valuation of the property for rate purposes is based strictly upon the reproduction-cost-less-depreciation method, no weight can be given to the fact that in the particular case a large sum may have been paid for the franchise originally, except as this is evidence of what it would cost to "reproduce" it.

However, the obvious uncertainty of reproduction cost so far as franchises are concerned makes this method for franchise purposes inapplicable.

Where the value of the franchise is allowed in a rate case it must be based upon actual cost or assumed actual cost, without depreciation where the franchise is perpetual, and depreciated in proportion to its years where its life is limited.

3. FRANCHISE VALUES FOR PURPOSES OF CONDEMNATION

In a condemnation proceeding there is a determination on the part of the public that the acquisition of the plant is a public necessity. It is assumed that the acquisition of the property is carried through against the will of the owner, although in some cases the owner's opposition is little more than formal. Fair value will not be determined as the price paid by a willing buyer to a willing seller, but rather the price to be paid to an unwilling seller when public necessity requires that his property be taken for public use.

The valuation of a franchise in condemnation proceedings is a matter of special difficulty. What it cost originally is of no moment. What it would cost to reproduce it is almost as immaterial. The present worth of its prospective earning power is the real criterion, but this standard of judgment is rendered doubtful because of the uncertainty as to future rates. It has been a matter of dispute whether, in a condemnation case, the value of the franchise should be based upon the assumption that existing rates will be continued indefinitely, or whether, on the other hand, it should be based upon the assumption that only a fair rate will be permitted. Inasmuch as the investment in a public utility is devoted to a public use and is, therefore, subject to certain burdens and limitations, it would seem that the rules of valuation ought to presume only fair and reasonable rates and ought, therefore, to discount the apparent but largely fictitious value which would naturally be reflected in the earning power of the franchise while the utility continues to charge excessive rates without governmental interference. In this respect valuation for condemnation purposes may properly be distinguished from valuation for taxation purposes. The theory is that in condemnation the public authorities take away the entire property, including all its future earning power, while in taxation they merely take a portion of the earning power for the current year, and, if the earning power in succeeding years is diminished, they will then take less.

It is for the purpose of condemnation that the character and duration of the franchise have the greatest

significance. If the franchise fixes the rates beyond the power of the state or of the grantee to revise them, then the character of the rate so fixed will be the most important element in the determination of the value of the franchise. If the rate is so low that the grantee is losing money and is bound to lose money under future conditions, the franchise is properly regarded as a liability rather than an asset. If, on the other hand, the rate is higher than necessary to secure a fair return upon the actual investment plus any amortization reserves that may be required to safeguard the capital, then the franchise is an asset and its value is to be measured by the present worth of its prospective earning power. Accordingly, while the fixed character of the rates has great influence upon the value of the franchise for condemnation purposes, this influence will not always be in the same direction. The fixed rate may in some cases prove to be a disadvantage to the corporation.

Of course, we should not consider the rate, where that is fixed by the contract, apart from the other conditions of the franchise, particularly those relating to service or contributions to the public treasury. A rate might be very favorable to the company and yet the advantage of it be offset by onerous terms as to compensation or as to service. On the other hand, a rate might be very low and yet its disadvantages to the company be more than offset by the release of the company from various obligations ordinarily assumed by a franchise holder. A good illustration is furnished by the Pingree three-cent fare lines in Detroit. Pingree was so anxious to get low fares and to inaugurate successful competition with the five-cent lines, that in the low fare franchise he bound the city to construct and maintain the pavements and even the foundations of the tracks, and relieved the grantee from a part of the usual burdens of taxation. These concessions went a long way to overcome the disadvantages to the company of the low fare.

In this connection, also, it is necessary to bear in mind that in almost every case the terms of the franchise are such as to require, or at least not to preclude a public service commission from requiring, good service, whether it is profitable or not. It is recognized as one of the fundamental principles of public utility regulation that the rendering of adequate service to the public is an obligation paramount to the right to earn dividends for the stockholders. In practical application, however, the wind is usually tempered to the shorn lamb. Certain methods of controlling service may be precluded by the terms of the contract. Extensions and improvements that would be highly advantageous to the public will not be required of a utility that is not being operated at a profit, so long

as such extensions and improvements are not strictly essential to reasonably good service. If, however, a franchise-holding corporation is making liberal profits, under the protection of a fixed rate, the regulating authority can undoubtedly require a much higher standard of service than it could or would require if the property was being operated at a loss. Therefore, even where a liberal rate is fixed in the franchise and cannot be reduced by any power in the state, the present worth of this franchise should be discounted to a certain extent in consideration of the fact that by regulation the surplus profits may be largely diverted from the pockets of the stockholders by the requirement of more liberal service. In all cases, except for taxing purposes where the valuation is for the current year only, the advent of the public regulation idea tends toward a very conservative valuation for franchises, no matter how advantageous they may appear to be to those who hold them.

In many cases, maximum rates only are fixed as a matter of contract. In many other cases the rates are not fixed at all. Wherever the rates are left to be established by the franchise owner or by a regulating body such as a public service commission, the value of the franchise will be measured largely by the security it gives to the investment. This in turn will depend either upon its duration or upon the conditions that control its termination. If the franchise is perpetual and the utility is well established, so that it promises to continue in service indefinitely, the necessity of an amortization fund is eliminated. The investment has been made and presumably will be kept intact. Under these circumstances the investor does not have to worry about getting his money back. It is assumed that the money will always be needed in the utility and that if a particular investor desires to withdraw his contribution, he can do so by the transfer of his securities to others. He does not have to get his money back out of earnings. A franchise of this character may be said to have value, but its chief value consists in the life and security which it gives to the physical property. An attempt to measure its separate value on the basis of the present worth of its future earnings is more or less chimerical and is almost certain to lead to an overvaluation. Even future gross earnings are a matter of great uncertainty, depending upon the increase of population, the demand for the service, possible direct or indirect competition and the rates permitted to be charged. To estimate net earnings is still more difficult, because of the additional elements of uncertainty in the matter of operating expenses, depreciation and carrying charges. A perpetual franchise that today appears to be an asset may, within a few years, become a liability through changes

in the conditions of operation and in the measure and methods of control exercised by the public. Therefore, where property is taken for a necessary public use, even though the owner parts with it unwillingly, the valuation of the franchise should be very conservative, partly because of the extreme uncertainty of the amount of future net earnings. If we are to judge by past experience and present tendencies, it may be said that the amount of future net earnings is likely to be less than any definite estimate which will be made on the basis of past figures. This is due partly to the neglect of depreciation in the past and partly to the constantly increasing expenditures resulting from higher labor costs, higher standards of service and greater interferences with operation as street congestion increases.

If a franchise, having a limited life, contains a provision that at the end of the period the physical property shall be purchased by the city or by some other grantee of the city, this fact tends to put the franchise, so far as valuation is concerned, upon a parity with a perpetual franchise; for under both of these forms of franchise, it is equally unnecessary to provide for an amortization fund by means of which the investment will be retired out of earnings. In fact, such a limited term franchise may be more valuable than a perpetual franchise, for under it the investor is sure of getting his money, while under a perpetual franchise he runs the risk of the utility itself becoming obsolete and the entire investment being lost.

If, on the other hand, the franchise, like most limited term grants, makes no provision by which the city is obligated either to renew the grant or to refrain from building a new plant or letting somebody else do so, then the investor, as a matter of common prudence, must figure on taking out of the enterprise from year to year somewhat more than a fair return upon his investment, in order that he may get back his principal as well as his interest. He has no assurance that when the grant expires his property will not be reduced to scrap value. Strictly speaking, therefore, he ought during the life of the franchise to recover, in excess of a fair return, that portion of his investment which represents the difference between the original cost of the plant and its ultimate value as scrap. In practice, it is true that most utility owners have trusted to luck or politics to get their franchises renewed, or have put their dependence upon the well-known difficulties of installing a competitive service and upon the relative certainty that the public will demand the continuance of the service without reference to the date of expiration of the franchise. Accordingly, the investors have frequently, if not generally, assumed a portion of the risk and have not figured upon getting

their entire investment back in the shape of excess earnings during the term of the franchise. Doubtless in many cases companies, without any ultimate security for the investment itself, have accepted franchises with rates and other obligations so fixed as to make it utterly impossible for them to render adequate service, earn a fair return upon the investment and also withdraw their capital out of earnings during the franchise period. If a company, adopting a safe and conservative policy, succeeds in getting its investment back before the expiration of the franchise, the investors will then be in a position where they are even with the world and in addition own a utility plant, with whatever value there may be in it. They will have eaten their cake and still have it. The chances are that the plant, if in good condition, will either be purchased by the city or will continue to be operated, with or without a franchise, by the company. So, the corporation, if it pursues a safe policy, stands to make an unreasonable profit. If, on the other hand, it decides to take a chance and make no effort to recoup itself for the investment out of earnings, it stands a considerable chance of losing most of its capital. Under these conditions, a limited term franchise is most undesirable, from the standpoint both of the grantor and of the grantee, and this fact should be taken into consideration as a major element in the determination of the value of the unexpired term of the franchise in a condemnation proceeding. It has been customary for Professor Bemis, Bion J. Arnold, and others, in estimating the value of the unexpired life of a limited term franchise, to base it upon the expected net earnings of the utility during the franchise period, over and above a minimum fair return upon the investment. This method I believe to be unsound and highly detrimental to the public interest. When a company accepts a limited term franchise with a fixed rate, it should be presumed that the grantees intend to get their money back out of earnings, and accordingly, when we come to value the franchise as a separate and distinct element, we should not fail to take notice of the fact that the utility not only must earn a fair return from year to year upon the amount of the investment, but also ought to lay aside a surplus sufficient to amortize the difference between the cost of the property and its prospective scrap value when its franchise or life expires. If we allow the physical property at its full going value, then the value of the franchise should be greatly reduced by the elimination of the amortization charges upon the investment from the net earnings. If, on the other hand, we allow the franchise at its full value on the basis of its earning power in excess of a fair return upon the investment without amortization charges, we should figure the

present value of the physical property in the light of the fact that it will have only scrap value at the expiration of the grant. This suggestion is somewhat revolutionary and I admit that no absolutely true method can be fixed with certainty. Probably the fair valuation would be derived by a method half way between the usual one and the one just suggested. This half-way method would be justified by the fact that in practice public utilities do have a good chance of preserving their physical investment at the expiration of the franchise, either through the renewal of the grant or through the sale of the property. At the same time they stand a good chance of losing their physical property. The danger of total loss is more technical and legal than it is real, but in valuing a company's franchise, in a case where it is being acquired to meet a public necessity, the technical and legal considerations chiefly determine what the company is entitled to get when it is deprived of its street rights.

Another element that goes to determine the value of a franchise in condemnation proceedings is the exclusiveness or non-exclusiveness of the grant. In the Long Island Water Supply case, the New York courts held that although the franchise was exclusive, its exclusiveness could be taken away at any time by a legislative repeal and, therefore, that the feature of exclusiveness added nothing to the separate and distinct value of the franchise for which the city was bound to pay. This is undoubtedly good law where the exclusiveness of the franchise is merely a matter of legislation, not a matter of contract. Where it is a matter of contract, if the rates are not subject to reduction, exclusiveness will certainly enhance the value of the franchise in condemnation proceedings.

4. FRANCHISE VALUES FOR INVOLUNTARY SALE

By "involuntary sale" I mean sale enforced in accordance with the terms of a franchise or contract at the option of the city. For example, the old Denver water franchise gave the city the right to purchase the company's plant at the expiration of the franchise at a valuation to be fixed in a specified manner, but imposed *no obligation* upon the city either to purchase the plant or to renew the franchise. On the other hand, under the old exclusive Minneapolis gas franchise, the city had the right to purchase the franchise and works at their actual value at the end of forty years, with the proviso that if the city did not exercise its option, the franchise would be automatically extended for an additional period of twenty years. In both these cases, and in others more or less similar to them, including cases of the Wisconsin indeterminate permit type, purchases by the city might properly be regarded as

involuntary from the standpoint of the franchiseholder. Clearly, in the Denver case the franchise could not have been given any value in case the city had elected to purchase the plant at the expiration of the grant; and just as clearly, Minneapolis would have had to pay a good round sum for the gas franchise if the city had elected to take over the plant in 1910. Under the Wisconsin law, it has been determined that nothing need be paid for the franchise as such when a city exercises its option to acquire a public utility. But in the Wisconsin cases, the fair price is fixed by the state commission and, in practice, includes an allowance for development expenses and early losses which under a different type of franchise might readily be classed as franchise value.

In the celebrated Bristol water works case, the Rhode Island courts approved a franchise valuation which was in excess of the value of the physical property, even though the franchise contained a clause authorizing the municipality at its own option to terminate the grant. The franchise was an exclusive one for a period of fifty years, subject to this right of termination, and the court held that in case of termination, even under the option reserved for that purpose, the company was entitled to receive the full value of the franchise as an exclusive grant for the entire period. This decision appears to have been grossly unjust to the public and ought not to be a determining factor in the fixing of the law of franchise valuations.

It is not unusual to find in the purchase clause of a franchise a provision that, if the property is taken over by the city, it shall be taken over at its fair and reasonable value without taking into consideration the value of the franchise itself. In such cases, the subject-matter of this discussion, nominally at least, is eliminated. However, unless the language used is very precise and very comprehensive, the grantee is certain to try to get what would otherwise be a franchise value under the guise of something else.

Public utility property, especially in its intangible elements, is Protean. Having dismissed it in one guise, we are likely to find it coming back in another; or even more strangely, if we accept and embrace it in one guise, it is likely straightway to renew its advances in another. One public service corporation attorney said to me, in the midst of a negotiation, that, when he considered all the perils to which a utility investment is subject and all of the elements of value that can properly be claimed for it, he sometimes had difficulty in imagining how any public utility, under any conditions, could possibly earn a fair return. It is of the utmost importance to the public, when the franchise is definitely excluded from the valuation by the terms of the contract, that this provision should not be rendered

nugatory by the admission of substitutes. It is also of the utmost importance that, irrespective of any such provision in the contract, the value of the franchise should not be duplicated or triplicated in going value, good will, water rights or other intangible elements often claimed by the companies.

It is apparent that the principles of valuation as to franchises in these cases of involuntary sale differ from the principles of valuation in condemnation cases by reason of the restrictions contained in the purchase clause of the franchise itself and also by reason of the occasion of the purchase. Condemnation may take place at any time. Involuntary sale as here defined is likely to come at the expiration of the franchise as an alternative to its renewal. Moreover, there is a certain difference in the spirit of the proceedings. Where the franchise holder has agreed that the property may be taken over, even though this agreement may have been extorted from him as a part of the price of his securing any franchise at all, he is not entitled to any additional allowance on the ground that the property is being taken away from him against his will. He has made his bed: now he must lie on it. In most cases of this kind no value at all can be assigned to the franchise as a separate item.

5. FRANCHISE VALUES FOR THE PURPOSE OF VOLUNTARY PURCHASE

In voluntary negotiations for the purchase of a public utility property, it is impossible to lay down specific rules for valuation. Everything depends upon the relative positions of the two parties to the bargain. The company, naturally, will not be disposed to sell the property for less than its value to itself. On the other hand, the city, if it acts on business principles, will not be disposed to pay more than the property will be worth for municipal purposes. The valuation is a matter of bargaining. While it might be shown by a more or less orthodox method that the franchise has great value, the city will not be disposed to pay this assumed value unless the city needs the franchise. If the city already has the right to duplicate the plant, it would act foolishly and in an unbusinesslike manner if it agreed to pay a large sum for the company's franchises, unless, indeed, the city was in fear of competition from the company and was guided by the same motives which have so often controlled public service corporations in swallowing up their rivals. As a matter of fact, however, a city seldom has reason to fear the competition of a private company. The fear is all on the other side.

In voluntary negotiations for purchase, the city might be foolish to pay even the original cost of the property, or the present value based upon reproduction-

cost-less-depreciation, or, on the other hand, it might be wise to pay a sum greatly in excess of the cost of duplication, if by doing so it could get a profitable business more cheaply than in any other way.

The valuation of the franchise for voluntary purchase is likely to appear with increasing frequency in negotiations for the renewal and resettlement upon a new basis of franchise rights already outstanding. The value of the unexpired franchise in negotiations of this sort has been recognized in the celebrated street railway settlements of Chicago, Cleveland and Kansas City. These were not actual purchase cases, but cases in which the determination of the price at which the city could take over the property, if it desired to do so, was regarded as a primary consideration. Incidentally, the valuation agreed upon was used as a basis for fixing the recognized investment and determining either rates or profit sharing in the future. In agreements of this sort, it may be necessary, under the local conditions peculiar to any particular case, to give a value to the franchise and include it not only in the general purchase price, but in the recognized capital upon which rates and profits are to be reckoned. Nevertheless, the inclusion of the estimated value of old unexpired rights in this way is not to be accepted unless absolutely necessary. The theory of the inclusion of the franchise value in these cases is that the city, in order to get lower rates or better service, agrees to commute and capitalize the company's prospective earnings during the unexpired period of the old franchise on the basis of the old rates and the old service obligations. This is much like funding debts incurred for the payment of operating expenses of the city government.

The Kansas City negotiations in 1914 presented a curious case, where the street railway had gone into the hands of receivers and a new franchise was asked for on the ground that the terms of the old franchise could not be complied with if the road was to escape from bankruptcy. At the same time, in the valuation for a resettlement the company claimed an allowance of some \$13,000,000 as the value of the unexpired term of the franchise which it was trying to get rid of. And in this case the city "fell for it" with certain glosses and concealments. New York City did likewise in a more roundabout way when it guaranteed the rapid transit companies' existing profits as the price of securing their co-operation in subway and elevated railroad expansion.

6. FRANCHISE VALUES FOR THE PURPOSE OF CAPITALIZATION

It is a not unusual provision of public service laws which confer upon regulating bodies the right to control the stock and bond issues of public service corporations,

that no franchise shall be capitalized except to the extent of the necessary original cost to the grantees in the shape of lump sum payments to the public authorities which made the grant. Under provisions of this kind it is immaterial how much the present owners of the franchise may have paid to others for it. It is also immaterial how much the grantees may be required to pay to the city in the form of annual rentals or special taxes or license fees. These expenditures are to be treated as operating expenses and not capitalized. The only element of franchise value to be admitted to capitalization is the actual original investment required for the acquisition of the franchise from the city.

The laws have not always been so strict. In 1884, when the rival gas companies of New York City, after a period of cut-throat competition, following a long period of large dividends, desired to consolidate, the legislature was accommodating enough to authorize them to do so, and to allow them to fix upon the value of their property and franchises and to issue securities not in excess of such value. Curiously enough, the companies found their franchises were worth exactly \$7,781,000 and capitalized them accordingly.

That franchises should be capitalized except as to the necessary original cost of acquiring them is contrary to public policy, and therefore I need not discuss further the principles of valuation as to franchises for the purpose of capitalization.

A word should be said bearing upon the valuation of fag-end franchises. It sometimes happens that street railway routes are broken up through the expiration of the franchises for different portions of the same route at different times. This is notoriously the case in

Detroit today. The principal franchises in the heart of the city have expired, while the Detroit United Railway still maintains its hold upon the extremities of the routes by reason of franchises received from the local authorities of towns and villages which were later annexed to the city. The city cannot establish a complete and satisfactory municipal system without the use of these outlying ends, and the company cannot operate profitably at all without the use of the streets where its franchises have expired. Each party is in a position to hold the other up with more or less success, but without profit to itself. In public relations franchises should never be given a "hold-up" value. The valuation of fag-end franchises should be made on the basis of their value to the owner as complete independent operating rights. If they have no value except in connection with other rights which do not exist, no value should be assigned.

Franchises sometimes contain special provisions and conditions which add to or detract from their value. The experience of Detroit may be cited again, where a provision of the famous Pingree grant to the effect that any new street railway routes required for the convenience of the public shall first be offered to the grantees of this franchise, has returned to plague the city in its efforts to establish municipal ownership on the five-cent lines before the expiration of the Pingree grant on the low-fare lines. Special provisions of this sort naturally have to be taken into consideration in the valuation of franchises, but their effect is so problematical and they are sometimes so contrary to public policy that they should not be permitted to swell to an appreciable degree the value placed upon a franchise for public purposes.

DETERMINING FRANCHISE VALUES

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WITH most of Mr. Wilcox's observations I am in hearty accord. But I have tried very hard, without success, to understand his proposition, so confidently asserted, that the reduction of the rates of a public service corporation by public authority gives a security and stability to the property and to its earning power which enhances the value of the franchise; and that, for taxing purposes, a franchise under which high rates are charged is to be valued the more highly the more likely it is to have its rates reduced by public authority.

Of course, it is obvious that the greater the security of the investment the lower the ratio of return to the capitalized value of the enterprise, including the franchise. But greater security does not come from a reduction of rates. Security comes primarily from the prevailing morality in the community in which the franchise is operated being on a high plane, and secondarily from institutions which ensure a judicial and fair consideration of the rights of the grantees of franchises and an effective enforcement of those rights against local clamor.

Mr. Wilcox points out the different ways courts look upon franchise values, according to the purpose for which the valuation is made.

The totally different methods which prevail in valuing franchises for taxation and in valuing them for rate making and condemnation show how much has yet to be done before such appraisals are placed upon a sound basis.

Some of the methods sought to be applied, particularly in cases where the appraisal is made to tax franchises, are methods which have been rejected in the valuation of other kinds of property. For instance, when a piece of property, held under a long-term lease, is condemned, and it becomes necessary to divide the award between the owner of the fee and the owner of the leasehold, it is not permissible to add together the value of the respective interests of these two parties. The first inquiry must be What is the value of the entire property? and then the various interests must be carved out of that value. Perhaps, theoretically, the other method would produce the same result, but in practice it does not do so. So, in valuing franchises, we should first value the entire enterprise, franchise included, and then carve out of that value the proper portion to be attributed to the mere permission to use the public streets in carrying on the business. This method would defeat many assessments for taxation.

Separately from a going enterprise a franchise has little or no market value, except under very peculiar circumstances. When granted it is usually worth nothing, because the terms imposed equal the opportunities to utilize it for profit. Where it is worth something at the time it is granted, that value can be easily computed. Difficulties arise in valuing a franchise only when it is sought to attribute to it—that is, to the permission to use the streets—the increment in value which comes to the entire enterprise after it is developed and is proved to be a commercial success under the original conditions imposed. The city authorities in taxing it seek to attribute the entire increment to the franchise; and when it comes to rate making, they seek to disregard, as far as possible, all of such increment, and hold the franchise itself as worthless.

We may expect to find the best reasoned decisions in rate cases. Courts are notoriously indisposed to interfere with the judgment of tax assessors, and in condemnation cases the award usually contains an item by way of good measure to include any element which the court may conclude should have been recognized.

In appraising the value of a public service enterprise for rate making it is not at all its market value that is inquired into; it is the value upon which the owners are entitled to earn a fair rate of return.

I desire to urge here that it is this value—namely,

that upon which the owners and operators are entitled to earn a fair rate of return—which should be the standard out of which should be carved the value of the franchise; and that valuations for all other purposes should be such modifications of this as are made necessary in order to accomplish a just result.

Net earnings are undoubtedly an important factor in the valuation of franchises for any purpose, but to apply what is called “the net earnings rule” differently in a tax case from the way it would be applied in a rate making case or a condemnation case is sheer oppression. The way the New York courts have applied it results in turning into the state as the tax on the special franchise about one third of what remains of the gross earnings after deducting operating expenses, depreciation, taxes and 6 per cent upon the value of all the physical property, used and useful, rendering the service. No other property is appraised for taxation in any such way. If this method were used in a rate case, it would result in an absurdity, as Mr. Wilcox has pointed out, and if used in a condemnation case, it would often lead to a scandal.

The vice in this method is due to a double error: first, in attributing all of the value of the enterprise, other than the value of the tangible property, to the franchise, and, secondly, to capitalizing that part of the net earnings thus attributed to the franchise at a very low percentage, as though the value of the franchise thus arrived at was almost as permanent and secure as a real-estate mortgage.

With respect to all kinds of property, other than franchises, the valuation for taxation is made on a more conservative basis than for any other purpose. To treat franchises differently is dishonest and prejudicial to a proper development of our taxing system. If it be the policy of the state to take one third of the net receipts of a public service corporation, after allowing a bare 6 per cent out of net earnings upon a conservative valuation of the tangible assets, it would be better for the morals of the community to take such a position directly and not reach that result by false reasoning.

The current ideas of the value of franchises are exaggerated. This is due to the peculiar conditions which have existed in this country. Our government was too inefficient satisfactorily to deal directly with the numerous public services which became more and more necessary as we came to live in crowded communities. Then, we inherited political traditions against the extension of governmental functions.

The public demanded those public services: the government was not equipped to supply them: we did not wish the government to supply them: so franchises had to be granted to private parties. But the notions

as to the control of the grantees for the public good were crude and improvident.

The interest of the state and the people, under our political conditions, has been too often treated as merely the interest of a few politicians in office for a short time. The kind of men, who look favorably on propositions to pay running expenses out of borrowed money and to collect revenues from the sources which can pay this year's taxes with the least organized opposition, are not given to careful scrutiny of the public interest when a contractor undertakes to supply a needed public service. They realize that the conditions which they impose are not likely to be criticised by the public until their results are proved to be unfortunate. By that time a new set of statesmen will be in charge. We need not be surprised at the absence of a far-sighted policy on the part of our public officials.

And the promoters who accepted such grants, for the most part, have had no intention of staying in the enterprises and completing the contracts. And the investing public, equally with the promoters and politicians, have been short-sighted. They, too, make investments to sell out at a profit—not to stay in and reap the legitimate reward of a well-conceived and well-developed enterprise. Fortunes made through public franchises are, to a great extent, made by trading in hopes—propositions capitalized by those given to happy optimism and sold out in small lots to a credulous public given to gambling and watchful of the daily market quotations.

The real public, who pay in the end for all the mistakes, are hard to distinguish. They are not a permanent public. They are nomadic. They move about, and no individual knows how long he is likely to have a stake in any particular community.

The result of all these conditions has naturally resulted in a management of public service utilities unsatisfactory both to the public and to the investors. The promoter and those who first exploit a franchise try to get out of it all that is possible, regardless of the future, in order to boom the stock and unload on others. Everything possible is charged to capital account; no provision is made for depreciation, and the biggest possible dividends are paid. It is plausibly claimed that the great element of value in the enterprise is the franchise.

The people on whom these enterprises have been unloaded have often had occasion to pay heavily for their faith in the popular idea respecting franchise values.

It is not surprising that such unfortunate conditions have resulted in confusion of thought as to franchise values.

In view of the way in which franchises have been

granted and exploited, the attempt to tax them is not to be wondered at. The public believe in vicarious punishment, and if one corporation offends, it is ready to visit the penalty on any other corporation which happens to be within convenient reach. It is the natural thing to try to correct one evil by another,—to take back part of an improvident grant through taxation. Victor Hugo somewhere said: "The Lord made a mouse; and he said, 'That is a mistake; I shall make a cat.'" Even though, in the long run, a tax on a public service corporation bears upon the great mass of the people, it is a popular tax, and is in response to a real sense of justice, expressed in a desire to punish one of a class looked upon as wrongdoers and to make it contribute a part of the tolls wrung from the public through what is believed to be an unreasonable exaction.

It is the ignorance of the people which leads them to immoral and unfair conduct toward the holders of public franchises.

My late senior partner, Mr. Lord, used to say that resisting unjust taxation has led to all progress in civil liberty. I am tempted to add that it materially assists a correct understanding of values and correct business methods.

Attempts to value franchises in condemnation cases proceeded without much regard to any principle. It was only after the state began to tax franchise values that a careful study was made of what those values consisted.

The Tax Law in the State of New York provides that all real property and all personal property shall be taxed. Notice that it does not provide that all property shall be taxed. Prior to 1899 the tangible property of public service corporations was assessed for taxation. The value was calculated on as conservative a basis as possible, and often omitted interest during construction and other allowances. The market value of a company's stocks and bonds usually showed an aggregate value for the enterprise very much more than the appraisals of the land and personal property. The difference between these amounts was cheerfully claimed by the corporation to be the value of the franchise, as the courts had held that the franchise was not taxable, being neither real property nor personal property. This encouraged an exaggerated view on the part of the community of the value of franchises.

In 1899 the legislature in New York thought that it had discovered a new source of revenue, and proceeded to tax franchises. It did not propose to tax all business or all property, but only a single element of a particular kind of business. And the legislature was justified, from court decisions and the popular view, in

believing that the value of franchises—that is, the value of the mere privilege of maintaining structures and equipment in and under the public streets—was worth immense amounts of money.

As might be expected, the tax assessors attributed all value in public service enterprises, other than tangible property, to the franchises. And the court often surpassed this when it adopted the net earnings rule, which capitalized at a low percentage the net earnings, after deducting 6 per cent of the present value of the tangible property.

This is like the claim on behalf of the lessee of a building, when the building was under condemnation, that the profits of his business were the measure of the value of his lease. Surely the fact that a saloon keeper can make a profit in running a saloon on a particular corner has a bearing on the value of the lease. But there are other factors of value in such an enterprise beyond the lease and the bar equipment, and it has been held that the saloon keeper's profits do not measure the value of his lease. Yet, when it came to valuing franchises for taxation, the temporary earnings have been used as the measure of that value.

In tax cases the New York courts have declined thus far to recognize the necessary investments of the company in building up its business by expending money for talent and for experiments and for the deficits in return on moneys actually invested during long periods of development. But they have recently in a rate case recognized deficits in past earnings under the term "going value."

Having made the original error of attributing to the franchise all of the earnings beyond what can be definitely attributed to some other element of value, going value is likely to assume more and more importance as we struggle to arrive at a correct basis for the valuation of franchises for taxation. Our best hope is that as knowledge increases the elements included in going value may be increased and the exaggerated view of franchise values modified.

Of course, when we attribute going value to a public service enterprise, we must assume that it is well adapted to render a public service that is needed by the community, and that it is worth to the community what it has cost the investors, even though it may have been unremunerative up to the time with reference to which the inquiry is directed. The enterprise must be one that if it could be carried on, unregulated, as a purely commercial proposition, would eventually pay, and it must be one of such benefit to the community as to entitle the investors to fair remuneration. If we include all the considerations affecting the rights of the owners to remuneration in appraising going value, we

shall do no more than estimate as of the present time the fair claims against the enterprise.

Now, is the going value to be limited to the actual cost, the out-of-pocket losses of the investors? Or should it also include the loss of return on the money invested during the unremunerative periods? Or should it also include, in addition to losses and loss of return, a fair allowance for the foresight exhibited, the energy displayed, and the risks incurred, even after the risks have become a thing of the past?

Every enterprise has some risk involved in it. Its value is more or less doubtful until it develops and until the event proves that it is sound. Value is relative as to time and place; and what is valueless under one management may become a great success under another management. Why should we attribute to one feature of a contract—the bare permission given to the investors to use the streets—the enhancement in value which comes through successful development and operation? Might it not with more correctness be attributed to the services of the skilful manager, whose intelligence led to its success, perhaps after some blunderer had run it into the ground, or to the credit and optimism of the financial backers? The enterprise which uses the streets is not different in this respect from any other business venture.

Franchises are government contracts, and their value, like a government bond, depends on the public faith. The local government is usually in a position to prevent the success of any public service enterprise. In the usual case the terms of the contract can be altered by the party of the first part, the grantor, from time to time, since an express or implied term of most franchises requires that the service shall be subject to public regulation and rendered at a reasonable rate. When we undertake to attribute value to such a franchise, it is not like attributing a value to an ordinary contract, where the terms are fixed. If the rate charged gives the investors no more than a reasonable return in view of the risk involved, the permission to engage in the enterprise cannot be worth anything. If the investors charge more than a reasonable return, they are violating their contract, and should be compelled to live up to it and reduce the rate to what is reasonable. From this point of view, where a franchise, as such, is deemed to have a distinct value, such value is the capitalization of the extent to which the managers of the public service enterprise are permitted to go beyond the conditions of the contract in the matter of rates and service, through the supineness or inefficiency of the public authorities charged with the regulation of rates. A value predicated on a breach of the contract does not rest on a very sound basis.

Another view might be taken. For example, an

enterprise is offered involving great risks—such as New York's first subway. No one wants to bid for it. The franchise is worth less than nothing. The city offers special inducements, such as exemption from taxation and the use of its credit to meet the cost of construction. Then a bidder appears for a contract to build and operate the road, and the adventure is carried out and proves to be a great success. It makes a great deal of money. Of course, if the rate cannot be reduced for the term of the grant, and the public cannot tax the enterprise, the contract, after it is shown to be a success, would have great value. But this is not due to the mere permission to use the streets; it is due to the immunity from taxation and the unassailable rate granted at the beginning as compensation for the risk. It is the monopoly feature, not subject to regulation, which gives the value. When all other property can be destroyed by taxation and regulation, it is worth something to be free from such burdens for a while.

But such a franchise is most unusual. The usual case is that the grantor may tax the enterprise, and control the rates charged and its service. Thus, the earnings may be so reduced, through taxation and reduction of rates, or through onerous charges in the service, that an enterprise which has proved to be more successful than was anticipated may still be worth nothing more than the original investment, or even less.

On the other hand, if the power to regulate be used fairly, consideration would be given to the risk involved at the beginning, and the fair return fixed at a percentage commensurate with such risk. The risk having become a thing of the past, and the rate of return permitted being commensurate with the past risk, the stock should have a value above par. The investors are to enjoy their reward. The enterprise can be sold at a profit beyond its cost.

Now, it is not exactly the permission to use the street which is worth more; it is the permission of the regulating body to charge enough to get a rate of return larger than the normal return on investments, as a reward for the risk assumed in the past—a risk which has proved to be unfounded by the happy outcome. It is the good faith of the community which, through the regulating body, has lived up to the true intent of the parties to the contract. This enhanced value, it seems to me, should be attributed, not to the franchise, but to other elements in the enterprise. If we include in going value all of the cost of establishing the business, then it should be treated as a part of the going value.

Among the costs of establishing the business is the price paid for the capital of the original investors, for the bright idea of the original promoter and for the skill and energy put into the adventure. We know what usually takes place. The bonds are issued with a bonus of stock. The services of the promoters are paid in stock. The value of the stock depends upon the success of the enterprise. If the enterprise fails, it is worthless. If it succeeds, those who take the risk are entitled to a reward for their risk. The permission to use the streets is not the basis of the success, although a necessary preliminary to the experiment. Success is primarily due to the foresight of the promoters and the courage of the investors and the skill of the managers. The managers are presumably paid by the investors as they go along. But the return to the investors should be what was held out as an inducement when they embarked on the adventure. The obligation to them was incurred at the time the risk existed.

A frank recognition of this element as a distinct obligation of the enterprise—perhaps as something to be gradually retired after a reasonable period—would go a long way toward bringing about that security which Mr. Wilcox recognizes as so desirable and making an investment in a regulated public service enterprise more attractive to capital. This does not at all imply that the liberality of the original promoters in distributing stock should be binding on the appraisers, any more than it is with respect to discounts on bonds.

It is always a matter for inquiry what causes the success of a successful enterprise. No one ever pretended that the success of a trust company should be attributed to its permission from the state to form a corporation. Why should we attribute to the privilege to use the streets the success of a telephone company? The permission to engage in the enterprise is no more the sole element of value beyond the tangible property actually employed in the operation of a franchise than is the lease in the case of the business carried on upon the leased premises.

We need a more correct understanding and a better analysis of the elements of costs and values in all kinds of enterprises if we are to reach sound conclusions in valuing franchises. We must recognize other factors in addition to tangible property and franchises when they are present. Whether these factors should be included in going value, or dealt with independently, they are surely assets which enter into almost every established business, and to omit them from the valuation of public service corporations must lead to an unfair result.

SOME DISTINCTIONS BETWEEN THE LEGAL AND ADMINISTRATIVE PHASES OF FRANCHISE VALUATION

BY CHESTER A. McLAIN

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Much of the confusion in the discussion of franchise valuation springs from a failure to segregate carefully two distinct aspects of the problem, the legal or constitutional aspect and what may be called the social-economic or administrative aspect.

In most of the cases which come before our appellate courts, except in so far as those courts have by statute been given a general power to renew the findings of an administrative tribunal, the sole question is one of constitutional law; whether the particular action of the legislature or administrative authorities constitutes a taking of property without due process of law or an impairment of the obligation of contracts. The considerations which enter into the solution of this narrow legal question are entirely different from the considerations which confront an administrative commission in regulating the charges of a public utility. Such a commission is bound to consider, not alone how far they can legally go in paring down the rates charged by the public utility, but how far they ought to go, having regard, not only to the securing of cheap and adequate service to the public, but also to the fair treatment of those who have invested their capital in the public service and to the possibility of securing future advancements of capital when needed.

Our courts, on the other hand, have repeatedly, and with good reason, asserted, that the wisdom of policy of particular legislative or administrative action is not open to question before them in a constitutional case, but that the sole point for discussion is the legality of such action under a reasonable interpretation of constitutional powers and limitations. It is no doubt true that the courts have not always drawn this clean-cut line between the legal and economic phases of the case before them, and that the judges have not always resisted the temptation to impose their own social and economic ideas upon legislatures and administrative boards, but this is all the more reason why we should insist on a clear separation of these two distinct phases of the problems in the future.

A franchise, in the sense in which we use it here, has been universally defined as a special privilege conferred by the government upon individuals. In this connection two classes of privileges are to be distinguished. The first includes those franchises which grant to private individuals the privilege of using private property in a manner not usually enjoyed by people in general. Such would be the privilege given to a railroad to operate on private right of way as a common carrier and collect tolls, or the right given to private individuals to organize and act as a corporate unit. The other class includes those franchises which grant to individuals the privilege of using public property for private gain. Such would be the right given to a street railway to lay its rails and operate its cars on the public highway.

Both of these classes of franchises are valuable privileges of which the holder cannot constitutionally be deprived

without due process of law. But the valuable right which the Constitution protects is necessarily measured by the terms of the privilege itself. The constitutional right not to be deprived of property without due process of law does not enlarge the property right so protected, but merely protects it in its existing extent with all its congenital limitations.

The privilege of using private property in the public service is necessarily limited by the state's power to regulate the charges for such service, and in the absence of express words to the contrary the state will not be presumed to have divested itself of this power to regulate public utilities. This power is itself circumscribed by the constitutional limitation that the state cannot reduce the charges below the point at which the public utility is enabled to earn a reasonable return on the fair value of the property which has been devoted to the public service.

The resultant of these two limitations is a privilege to use private property in the public service subject to the power of the state to reduce the charges for the services so rendered to a point at which they yield only a reasonable return on the fair value of that property. This in itself is a valuable right and if it is based on a binding contract with the state (and such a contract will not be lightly presumed) probably the holder cannot be deprived of it without fair compensation, although it has never been expressly decided that compensation is necessary to due process of law in eminent domain proceedings. If, however, it is not based on a binding contract, although it may still be valuable, it is revocable, and may be taken away at any time without compensation.

Moreover, although it is a valuable privilege and as such within the protection of the Constitution, it does not follow that the holder can claim the right to earn a return on the value of the privilege as such, apart from the value of the property used in the exercise of the privilege. For upon any reasonable interpretation of the franchise, it is no more than a privilege to earn a fair return on the property devoted to the public service exclusive of the privilege itself. This is so for the simple reason that any other interpretation leads inevitably to the result that the state has deprived itself of the power of regulating the charges of this public utility, a power of which the state can never be presumed to have divested itself without express words. For the value of this privilege is determined solely by its earning power, which in turn depends upon the rates which can be charged under it, and if the public utility can lay claim to be protected in the right to earn a fair return on such a valuation, no reduction of rates is possible without invading that right. In this connection too much emphasis cannot be laid upon the principle that grants by the state shall be construed strictly against the grantee, and that the state can never be presumed to have granted away its power to regulate the charges of public utilities.

The second class of franchises present more serious difficulties, because they may, or they may not, confer upon their holders property rights, in the strictest legal sense, in the public highway. Some jurisdictions seem definitely to have committed themselves by statute or judicial decision to the proposition that a franchise to use the public streets confers upon the grantee a property interest in the streets in the nature of an easement. In those jurisdictions it is difficult to escape the conclusion that the holders of such rights are constitutionally entitled to earn a reasonable return on the fair value of the property thus devoted to the public service. But such property can have no appreciable value apart from the privilege of using it in the public service, and when such rights are valued as they universally are valued, on the basis of their earning capacity, it is submitted that something more is being valued than the mere right of way in the public street. An additional element of value is being included for the privilege of using the right of way in the public service, and that privilege, as has been seen, extends no farther than the right to earn a reasonable return on the fair value of the property devoted to the public service exclusive of the privilege itself.

The conclusion to which this brings me is, that, so far as the narrow question of constitutional limitations is concerned, a franchise as such can never be considered as an element of value for rate purposes, and that unless the franchise is based upon a binding contract with the state, it can be taken away by the state at any time without compensation.

The fact that a franchise may be taxed as such by the state is not in the least inconsistent with this conclusion, for all valuable privileges are subject to taxation. You may be taxed on the privilege of buying, selling, borrowing, eating, or drinking, and they are all valuable privileges, but not that such privileges are property.

The social economic aspect of the problem calls for a broader and more liberal treatment, and while we may well sympathize with those who are inclined to view all claims advanced by public utilities through the glass of suspicion, we should not let our wrath at the tricks which have been played in the past blind us to the real problems of the present. The task before every public service commission today is not alone to use all its powers to secure adequate service for the public at cheap rates, but also to insure the continuance of such service by a due regard to the fair interest of those who are supplying it and a due consideration of the inducements necessary to attract capital to such enterprises in the future. To this end it seems to me that the attempt to apply an abstract theory of justice by a theoretical valuation of the rights and interests of the public utility is entirely abortive. Such a valuation is only one criterion of what the utility should be allowed to earn. The expression "fair return" properly includes more than the simple idea of the current rate of interest on a given capital sum.

Had I time, I should wish to enlarge on this idea, but a single example must suffice. In a recent investigation it was discovered that the telephone companies in New York were making an excessive profit and a reduction of rates was recommended to the extent of \$3,000,000. In the meantime

it developed from another source that the companies' operators were not receiving a living wage, and it was strongly urged that a part of this \$3,000,000 excess be distributed in higher wages to the employees rather than lower rates to the public. The same question will come up in another way in the Bay State Street Railway's petition to raise its fare to six cents, now being heard before the Massachusetts Public Service Commission. One of the reasons urged for such increase will be the increased expense of the company resulting from a recent arbitration award in favor of its employees. Rate regulating authorities can scarcely exclude such considerations from the problem of fair return.

But, to return to franchise values, if those who have invested in a public utility have done so in reliance on a franchise which seems to promise them a higher and more certain rate of return than they would receive in other fields of investment, and if this higher and more certain rate was necessary to induce such investments, a public service commission in facing the problem of regulating the charges of that utility may well permit it to earn that higher rate of return. But if this is to be done, it should be done openly by increasing the rate of return rather than padding the capital account with fictitious values.

Furthermore, if such increased rate of return was not necessary to induce the investment, but if, on the other hand, the owners of the utility entered into it in anticipation of making a little easy money, while the state winked at the operation, the public service commission is certainly not justified in permitting the public utility to capitalize that infarious anticipation and demand to earn dividends upon it. There are no considerations of policy which demand that a public utility which has systematically picked the pockets of the public in the past shall be confined in a vested right to do so in the future.

So, also, when the property of a public utility operating under a revocable franchise is being taken by eminent domain, the assessing authorities may well consider the effect on future investments in public utilities of the taking of a privilege on which investors have been led to rely as a guarantee of higher and more certain future earnings than could be received in other enterprises, and they may well think it wise to pay to those investors a bonus by way of consolation for the taking of this privilege. But here again it may make considerable difference whether this anticipation was legitimate or illegitimate. For certainly the state is under no obligation, either legal or moral, to compensate a private individual for depriving him of the expectation of illegitimate profit from mulcting the public with exorbitant rates.

In other words, the circumstances and the history of each particular case cannot be disregarded, and there is grave danger of making the problem too simple in the attempt to work out an abstract formula to settle all cases. Experience has shown that franchise values are at best compromises, and that for the purposes of rate regulation any real attempt to value franchises is incompatible with any regulation of the rates, for the plain reason that the value of the franchise depends on the rate which it is proposed to regulate.

These are problems which have been forced upon us by

the inexperience and neglect of past generations in failing to safeguard the interests of the state in the conduct of public utilities. For the future it should be looked to that franchises shall explicitly exclude any possibility of founding property rights on the privileges granted, and in this connection the

Wisconsin undeterminate permit seems a worthy model. But we should also guard against going to the other extreme so far as to discourage the investment of private funds in public enterprise, or we shall force the future generation to meet the alternative of public ownership or no service.

THEORY OF FRANCHISE VALUES

By ALFRED BETTMAN

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In many situations, the determination of the amount to be allowed for franchise value is a matter of expediency or policy or good measure or compromise or the price of peace. But here we are engaged in the endeavor to ascertain some general principle of franchise valuation capable of general use and furnishing at least a starting point for bargaining in special cases and for clear thinking upon disputed points. In such an endeavor we may be permitted to indulge in the delights of logic and consistency. We may be permitted to go behind the conventional meanings of words, such as "condemnation," "value," etc., and seek for the essential characteristics. The capture of some correct and consistent principle of franchise valuation can be best accomplished by examining the question of the proper measure of compensation to be allowed in cases of condemnation of utilities operating under term or perpetual franchises. We are here seeking the measure of value of a franchise treated as a separate unit or subject of valuation.

As Dr. Wilcox has pointed out, assessment of a franchise for taxation is of so special a character that the methods involved have little application outside of that field. In truth, the taxation of a franchise is essentially a franchise fee in the disguise of a property tax, and the amount of it largely a matter of taxation policy. Except possibly in an exceptional situation, such as that of the New York Consolidated Gas case, the absurdity of allowing separate franchise value in the process of rate regulation is obvious. It is almost equally as obvious that no franchise value ought to be allowed where the municipality is exercising a privilege of purchase contained in the franchise itself. The privilege of purchase is a privilege to terminate the franchise, and a terminated franchise cannot justly be said to have value. For the same reason an indeterminate franchise or permit has no separate value, and, in such cases, there is the additional reason that the community, by means of its power of continuous rate and other regulation, has the continuous power of reducing franchise value to the vanishing point. For this latter reason also, any franchise which, according to the laws of the state in which it is granted, places no limitation upon the power of the public to regulate rates and other matters, except the constitutional limitation of a fair return upon a fair value, is not a subject of separate valuation as a separate unit; for it is difficult to see any justification, moral or otherwise, for requiring the public to pay extra because

the public has seen fit to be indulgent in the exercise of its full regulatory powers.

The search for a general principle of franchise valuation would seem, therefore, to narrow itself to the question of the proper basis of compensation to be paid in cases where the public by involuntary proceedings, such as condemnation proceedings, acquires a public utility plant to which is attached a franchise in which for a specified term of years or perpetually the public has surrendered some of its regulatory powers. The special case where the utility has actually paid for a franchise may be excluded from further consideration for, obviously, except to the extent of the amount paid, such a franchise does not differ in value from a franchise given without payment.

ESSENTIAL NATURE OF CONDEMNATION OF UTILITY FRANCHISE

Applying ourselves, therefore, to this subject of compensation in condemnation proceedings, we will find that the more we analyze and reason, the more we become convinced that the man who first spoke of franchise value as an intangible value was not guilty of gross exaggeration. Analysis and logic lead us at the conclusion that the only principle which can be consistently applied is that the franchise be recognized as performing the function of giving full protection to the investment and a fair return thereon, and that in the performance of this function it exhausts itself, leaving nothing further to be valued.

For instance, let us examine the essential nature of a proceeding by a municipality to acquire a public utility. When a city is authorized by constitution, charter, or statute to acquire and operate a public utility, the operation of the utility by the municipality will not be by virtue of the franchise of the utility company, but by virtue of the city's powers as granted in the constitution, charter or statute. The municipality does not need the company's franchise at all. A term or perpetual franchise so exclusive that the city could not constitutionally be authorized to operate on its own streets, is almost unthinkable and certainly very rare. In every case other than such an exclusive franchise, there can be no doubt that the public does not need the company's franchise. The power given to the city to take by condemnation proceedings would seem on analysis, therefore, to be a power to destroy the franchise rather than the power

to take it for public use. It is doubtful, however, whether the constitutions of the various states permit the taking of private property for the purpose of destruction as distinguished from the purpose of use. Where a city takes an improved piece of real estate for the purpose of constructing a police station, the intention, of course, is to destroy the building existing upon the property. But this destruction is simply a necessary incident in the use of the property for a police station; whereas, to operate a utility, the community does not need the company's franchise at all and can leave it in ownership of the company. If it be argued that the taking of the plant destroys the value of the franchise and therefore the full value of the franchise should be paid, such argument implies a confession that the franchise without the plant, that is the franchise considered as a separate unit, really has no value. In the final analysis, therefore, there would seem to be justification for the conclusion that a statute granting to the community the power of acquiring a public utility by involuntary proceedings is essentially a statute providing for revocation of the franchise, contingent upon the community's taking and paying a price for the plant which will protect the investment made in reliance on the franchise; or, more accurately, such a statute may be interpreted as inserting a privilege of purchase into the franchise itself, and the question of franchise valuation becomes the same as though there had originally been such a privilege of purchase in the franchise. A case such as the *Monongahela Navigation Company* case in 148 U. S., in which one sovereign political community, the United States, was seeking to take or destroy a franchise granted by another sovereign political community, the State of Pennsylvania, is very special in its nature and the above analysis may not fit such a case.

Other lines of reasoning, into which time does not permit me to go, will be found to land us at the same destination. We all know, of course, that this conception of the nature of proceedings to acquire a utility is not the prevailing conception as embodied in judicial decisions, valuation practice and expert opinions, although many cases do contain hints in support thereof, and a few cases more or less avowedly adopt this conception. Often the language of the statute under consideration will preclude any such interpretation. We must all confess, however, that the prevailing methods used, in and out of courts, for determining franchise values contain much confusion and inconsistency, or at least much vagueness. An example is the one so clearly pointed out by Dr. Wilcox, where the utility is taken during the existence of a term franchise, yet the physical property is valued on the basis of an indeterminate permit to which is added a franchise value on the basis of a term franchise. Dr. Wilcox recognizes that there is no chance for obtaining an inexorably logical treatment of term franchises, that is for physical valuations based on the assumption that during each year of a term franchise the plant is continuously proceeding toward a mere scrap value and the plant valuation must therefore be reduced in proportion to the number of years of the franchise which have expired at the time of the public's acquisition. Dr. Wilcox suggests some halfway compromise

between the logic of full recognition of the nature of a term franchise and the logic of the prevailing practice; but he is naturally unable to give any formula for this compromise.

The confusion and inconsistencies which permeate discussions of the subject, both in judicial opinions and the literature of the subject, arise from several fallacies. Firstly, the analogies of public service property to private property are overstated. Secondly, there is the fallacy of assuming that the Constitution prescribes value as the test of compensation to be paid when property is taken for a public use, whereas, constitutions almost universally prescribe *just* compensation, which may or may not be the same as value in the usual sense of that word. And then there is misapprehension and ambiguity regarding the meaning of value. Value ordinarily means market value, and this is the meaning given to it in appropriations of purely private property; but for many reasons this is not the meaning which can be given where the discussion relates to the amount to be paid for public service property, and the courts have not attempted to adhere to market value as the basis of compensation to be paid for such property. We find courts constantly admitting evidence appropriate to valuation upon historical cost basis or actual cost basis or reproductive cost basis. All such evidence relates to cost and not to value, and such evidence is generally and rightly excluded from cases upon the value of purely private property. Cases of condemnation of utility property have been exceedingly few, dealing mostly with toll bridges, toll roads, and a few water plants. There has been so much study and discussion of utility valuation since the decisions which have set the precedents, that the questions involved cannot be considered as closed questions, and this new learning will inevitably, as it should, affect the attitude of courts. Principles and theories which hang together, which can stand analysis and which recognize the peculiar nature of public utility property will eventually win the approval of the courts.

The question immediately arises as to whether a statute, which, by express provision or interpretation, provides for the public acquisition of privately owned utilities and termination of their franchises upon payment of compensation which will fully protect the investment, is constitutional. Time does not permit a full discussion of this question. The implications of the *Milwaukee street railroad fare* case support the constitutionality of such provisions. The Wisconsin statute converting all existing term franchises into indeterminate permits, together with the view of the Wisconsin Railroad Commission that this conversion does not entail an allowance for franchise value in the fixing of the price to be paid for the utility, constitutes a legislative recognition of the principle that the proper function of a franchise is to give security to the investment and it should be valued accordingly. Most state constitutions contain a reserve power in the legislature to repeal or amend special privileges or corporate charters; and this reserve power, together with the tendency of the courts to interpret franchises as not constituting a surrender of the state's general power to regulate rates, service, etc., may be found sufficient to support generally the principle upon which the Wisconsin legislature and commission have proceeded.

ACTUAL COURT PRACTICE IN VALUING FRANCHISES

Turning for a moment from the consideration of theoretical analysis to the actual practice of courts, we find, as is well known, that courts generally require the franchise to be considered as a subject of valuation. Some courts decree earning capacity as the basis of compensation, not for the franchise as a separate unit, but for the franchise and plant combined, on the theory that the proceedings consist of the deprivation of an earning capacity and it is the value of this earning capacity which must be paid. This theory and method has much logic in its favor and can be consistently applied; but, if consistently applied, it would fail to satisfy many utilities, particularly those which have a low percentage of earning capacity and it would often result in injustice to such utilities. Strictly this method makes irrelevant all evidence of plant value, such as evidence bearing on actual or reproductive cost. But most courts admit such evidence. None of the decisions, however, treats the franchise as a subject of valuation separate from and in addition to the plant valuation. Generally the jury or commissioners are permitted to receive and consider figures relating to both value of the plant as a physical entity and values of the plant and franchise based on earning capacity, without receiving any very definite assistance as to how to co-ordinate these figures or make them subserve some definite and consistent principle.

FRANCHISE VALUE WHERE PHYSICAL VALUATION OF PLANT IS USED

Valuation on the principle that the function of the franchise is to assure private operation until the public is ready and willing to pay a price that will protect the actual investment of the utility company, will almost universally do full justice to all parties concerned. Sometimes it will give the company more than strict justice—as for instance, in the case of a utility operating under a term franchise whose earnings are insufficient to amortize the investment during the term of the franchise. In the comparatively rare case of a utility whose earning capacity is in excess of the amount necessary to earn a fair return on and also amortize the investment, there is some equity in requiring an extra allowance for franchise value representing the present value of this excess earning capacity. Where the plant valuation is not based on investment protection but upon some other

method or principle of strictly physical valuation, such as actual cost of existing plant or reproductive cost, then it is obviously just that payment be made for any earning capacity which is in excess of a fair return upon the plant valuation; for in granting the term or perpetual franchise, the public has induced investment upon not merely the privilege of building and operating a utility plant, but also the privilege of operating the plant free to some extent from public regulation, and it is this freedom which creates the excess earning capacity.

Earning capacity and not the actual earnings, however, should be used as the measure of compensation. The earning capacity should be measured upon the assumption that the public will exercise all the regulatory powers which the public has not expressly agreed to surrender. The public ought not be required to pay for its own indulgence or to pay a gambling value placed by the market upon the probability that this indulgence will continue. A perpetual franchise ought to be even less generously dealt with, and earning capacity measured upon the assumption that the public will fully exercise all regulatory powers which the Constitution will permit.

There are great practical difficulties in calculating earning capacity, and some guesswork may often have to be used and an approximate justice arrived at. There is always the danger that the future growth of earnings will be exaggerated. As Dr. Wilcox has so well demonstrated, there is also the danger that, under different guises, the same franchise value may be counted twice or more. For instance, if going value to cover early losses or other development expense be allowed in the valuation, such allowance can only be attributed to the principle of investment protection. Such an allowance really amounts to a requirement that the public pay for a non-existent or minus earning capacity, so to speak, and this allowance ought, in some way, to be taken into account in calculating a franchise value based on earning capacity.

If compensation be carefully calculated according to earning capacity as distinguished from actual earnings, probably very few utilities will be found to have any considerable value in excess of the amount necessary to justly protect the actual investment. But when a franchise is given its full force and vigor as the protector of the investment and a fair return thereon, the utility company will seldom have any just cause for complaint.

OPEN DISCUSSION

MR. HARRY BARKER, *Editor of Engineering News*:

Mr. McLain has given a very careful exposition of the legal principles back of the idea that franchise values should not enter the rate basis at all. Now, such law doesn't exist just because it is law, but because it is crystallized justice, or crystallized equity; therefore, there is a parallel statement to what Mr. McLain has made, but in more popular terms, which I think ought to be injected into the proceedings. I

thought that Dr. Wilcox was going to quote this; but he stopped just short of it. It was in the final decision of the New Jersey Court of Errors and Appeals in the Passaic 90 cent gas case in the concurring opinion of Justice White. He states that the franchise value is property and subject to the protection of the state; but it is not property used and useful in the service of the public, and therefore does not enter rate-basis value. That is a simple economic concept,

which Mr. McLain has explained very carefully in legal phraseology.

Justice White goes to another simile which amplifies the idea. He says that franchise value, that is in general and not in exceptional cases, is a stream which springs out of the right of the contract of the company to earn a reasonable rate on a reasonable value. That stream cannot rise higher than its source; and, therefore, cannot enter into the basis of that reasonable value. The major part of the opinion reads thus:

"I suppose it must be conceded that the franchise to charge as a 'reasonable rate,' sufficient to yield a net profit of 8 per cent on the value of the company's property as allowed and established respectively by the findings of the Utilities Commission in this case, is a very valuable property right. Certainly I think it is. That this valuable privilege is the company's is beyond question. That it is property is undoubted. That the law protects it against confiscation and subjects it to taxation follows as a matter of course. But that this valu-

able property right to charge 'reasonable rates' should by virtue of its own existence have the effect of converting itself into a still more valuable property right to charge 'unreasonable rates' is, of course, preposterous. Presumably the incorporators went into this public-utility business because they expected that their charter privilege to charge 'reasonable rates' for the gas they were to manufacture, distribute and sell would be a valuable one, but that fact and the fact that it has become so cannot have the effect of altering the terms of the contract made with the state. . . .

"That the company's contract with the state to charge 'reasonable rates' cannot be thus evaded is, of course, quite obvious. The plain fact is that the commercial value of the company's property right in its franchise can have no effect in fixing the rate it can charge, because by the terms of its contract with the state the stream of its franchise value arises from the spring of its right to charge 'reasonable rates,' and in the very nature of things no stream can rise higher than its source."

PRINCIPLES TO BE APPLIED IN VALUING LAND

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I

FUNDAMENTAL PRINCIPLES OF VALUATION

A DESCRIPTION of the method to be pursued in ascertaining the present value of the land of a public utility company cannot be begun without eliminating the many irrelevant arguments and theories which have been introduced in practically all discussions of methods of valuation. This can best be done by accepting as fundamental the principles of valuation which were laid down by the court in the decision of *Smythe vs. Ames* (169 U. S. pages 546-547). The court therein said:

"We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters

for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

PART IV LAND VALUES

METHODS USED IN VALUING LAND
LAND VALUES UNDER THE MINNESOTA
RATE CASE
THE MEASUREMENT OF LAND VALUES
WHAT SHALL BE DONE WITH APPRECIATION
ACTUAL COST AS A BASIS FOR LAND VALUES
VALUING LAND USED BY COMMON CAR-
RIERS
THE AGENCY THEORY
THE SERVITUDE OF RAILWAYS

If this decision is followed, the subject of valuation becomes simple. If it is not followed, literally and absolutely, the complications and theories which today are so prevalent inevitably follow. In the above quoted decision, the court demanded, among other things, figures showing the original *cost* of the property, the amount and market value of the bonds and stock, and the present *cost* of construction.

In an appraisal the original *cost* of the entire property and the present *cost* of the entire property must be found. From these two figures, supplemented by the other information demanded by the court, the fair "rate base," the "fair capital value," called by the court the "fair present value," is to be obtained not

arbitrarily nor by formula, but by well informed judgment for each particular case.

For the valuation of land, therefore, two figures must be obtained by appraisers; (1) the original cost of the land; and (2) what it would cost a public utility company to acquire that land at the time of an appraisal.

II

METHOD TO BE USED IN VALUING LAND

The valuation of the property of railroad companies, now being carried out by the Interstate Commerce Commission, centers interest in the valuation of railway lands. Moreover, the most important decisions bearing upon this subject have been in cases relating to railroads. For these reasons the following discussion of the method to be adopted in valuing land will be confined to cases of railroad companies.

Before any question of the *value* of land can be considered, two figures must be found, one representing the original cost of the land and the other what it would cost to obtain the land now in use and useful, if held in private ownership and acquired by the railroad company at the time of the appraisal. This last figure is the cost of reproduction.

An analysis of both the original cost and the cost of reproduction shows that each may be divided into two parts: (1) the figure which would be assigned in condemnation proceedings as the price which a company should pay for the land acquired by it, and (2) the costs of condemnation, of damages, and of purchase—including costs of plats, abstracts, notarial fees, recording deeds, and similar expenses.

The method which should be employed in ascertaining the first portion of both the original and the reproduction cost is that in which the normal market value is ascertained of adjacent similar lands as revealed by the prices paid in voluntary private sales, both at the time of the original acquisition of the lands by the company and at the time of the appraisal. This method is familiar to all who have had experience in the valuation of lands and has been extensively used as a normal basis for the ascertainment of the reproduction cost. There are two features of the recommended method, however, which need particular emphasis: one, that the normal sales value of adjacent, similar property should be found not for the time of the appraisal alone, but as of the date of the original acquisition of the land under valuation; the other, that each parcel of land—a parcel being defined as a separate and distinct purchase—be associated with similar adjacent lands of which the past and present market value can be ascertained. In addition to the two normal basic figures thus found, the amount paid to the original owner of

each particular parcel should be found and entered against that parcel.

By this method the price paid by the company and the normal market value at the time of purchase are shown for each particular parcel and there is revealed, by the ratio between these two figures, the difference between the cost to a company of its land and the amount which was paid at that time in voluntary normal sales of similar land. Moreover, as the date of acquisition is given, it will be possible, in many instances, to determine, for land similar in character, the trend of this ratio from early days to the date of the appraisal. The ratio of the price the company has actually paid for its land to the normal market value of adjoining similar lands is thus established in a distinct and convincing manner, and a ratio is established by the use of which the reproduction cost may be found from the normal market value of similar and adjacent land at the time of the appraisal.

It will be contended unquestionably that the practical difficulties involved in carrying out this method are insuperable; that in the case of the older roads the actual cost of the land cannot be found, and that there is no possibility of finding at the present time what the market value of similar adjacent land had been many years ago. Again, it will be argued that the subdivision of the railway lands into parcels is an academic refinement and that equally satisfactory results can be obtained by their division into groups such as wild lands, farming lands, or town land.

It must be admitted that difficulties will be found and that the research will be laborious and expensive in many cases. On the other hand, the court and the rate making tribunals must have facts, represented by figures which can be supported, to show that a public utility company did not and does not pay the normal market price when it acquires land and that, for the parcels of the particular character under valuation, it has always paid, and would be liable to have to pay at the time of valuation, the normal price increased by a definitely established multiplier.

Nor can the difficulties incident to the ascertainment of the original cost be offered as an excuse for a neglect of such figures in a valuation. Congress in its order to the Interstate Commerce Commission to value the property of all common carriers requires that the Commission shall investigate, ascertain and report "separately from improvements the *original cost* of all lands, rights of way, and terminals . . . and separately the original and present cost of condemnation and damages or of purchase in excess of such original cost." This requirement is logical, sound, and is one that should be made for all investigations relative to the cost of property of this character.

The figures obtained through the use of the method above advocated give the original cost and, for the reproduction cost, the price which a company has paid and in all reasonable probability would have to pay at the present time for the land now used for the benefit of the public. It eliminates the necessity of any assumptions as to what a company has paid or would have to pay for encumbrances upon the property, or for severance, for damages, for suitability or similar claims which in the past have been made in many claims for land values. The actual cost to the company of the land which it owns includes all such elements of value. They are shown as far as they need be by the difference between the market value of adjacent similar lands and the prices actually paid. There is introduced no element of personal opinion or judgment, however honest and wise. The figures represent facts as nearly as facts can be ascertained under existing conditions.

An objection may be raised to these groups of figures on the ground that the company may have paid originally more than it should. This objection cannot be well taken in such cases as the land had been acquired through condemnation proceedings. Such evidence is definite and convincing. On the other hand, where land has been acquired by private purchase, the company should be given the benefit of the doubt. It is a reasonable and fair presumption that each company has exercised its best judgment in purchasing land by private sale rather than through condemnation proceedings and in thus acquiring its land as cheaply as possible.

Again, objection may be raised to the plan here advocated on the ground that the ratio of original cost to normal value would be distorted in cases where the land had been donated. This objection is not well taken if the ratio assigned to find the reproduction cost is derived by the means of curves here advocated. It is true that if the ratio of the cost of donated land to normal value of similar land is taken as the multiplier to be used in finding the reproduction cost, the land originally donated could not be given any value as a portion of the reproduction cost. Such a result would be absurd. It makes no difference whether the land was donated or purchased by the company as far as the reproduction cost is concerned, unless it has been shown that the lands would again be donated if the property were reproduced. The reproduction cost is what it would cost the company to acquire its existing useful property at the date of an appraisal. It was to guard against any such fallacy that the ascertainment of the trend of ratios in successive years is advocated.

Attention may be called to the practical advantage that arises from the requirement of the method above

advocated in which the history and cost of each parcel are ascertained. This detailed method of appraisal will bring to light many costs which a more general study would neglect. Those who have had experience in the construction of the properties of public utilities will recall many cases where much necessary expense has been incurred which would not be shown as an item in an inventory and would not be remembered until recalled by a study of past conditions.

An instance of this kind may be cited, which, although not in railway construction, still is similar to many instances which will be found in the valuation of railway property. This instance is the expense which is frequently incurred in the construction of a reservoir. The land which must be used is occupied in part by railways, highways, or other necessary public utilities. In very many cases land must be purchased elsewhere and the original property reconstructed in the new location. This new land and all of the replacing new construction do not become the property of the reservoir company and, consequently, would not appear in the inventory of the physical plant. By the method here advocated the parcel of land acquired from each utility will be studied individually and the original cost of that parcel will be the cost of the new land and all replacing construction plus any sums of money paid for the right to make the substitution.

Another illustration drawn from railroad experience may be given. A railway company in acquiring a particular tract of land may have blocked the usual normal drainage of adjacent lands, lands not owned by it, and, as a consequence, may have been obliged to restore the drainage conditions by ditches built upon property not owned by it. By the study of the history of each parcel these requirements as a part of the conditions of purchase are revealed and the cost of such work, although it be on land foreign to the actual holdings of the company, still is a legitimate portion of the cost to the company of the lands which it now owns.

The second portion of both the original cost and the reproduction cost consists of all expenses not included in the price assigned as the market price to be paid by the company as a result of condemnation proceedings. The cost of condemnation proceedings, and all other expenses incident to the purchase and recording of the purchase of land, are as much a part of the original cost and of the reproduction cost of land as are the costs of purchasing, of transporting, and of placing other items of the physical property of an undertaking. There should be no controversy whatever concerning the right and justice of including such costs as a portion of the total original cost and reproduction cost of land.

While unquestionably these costs should be included, the practical difficulties in ascertaining all

elements of cost which should be included are great. The costs of condemnation proceedings, search of titles, recording and similar expenses, are relatively easy to ascertain in an accurate manner. There are, however, a large number of costs which are liable to be overlooked in a valuation, cannot be allocated to any particular parcel of land, or may be so nearly on the line between land costs and construction costs as to raise a doubt as to whether or not such expenses properly belong as a portion of the second element of land costs. One instance only of such original costs need be cited.

The original cost of land at the date of acquisition may have been ascertained with all care. A railroad company may have elevated its tracks many years after the original dedication of its land to railway purposes and in so doing damaged the adjacent property, although the abutment may have been constructed entirely upon the original right of way of the railroad. Clearly the damages which the railroad will be obliged to pay are a legitimate portion of the original cost of the land, but it seems equally clear that such damages can be included more properly as a portion of the second portion of the original cost than of the first.

Unquestionably there will be many individual cases where doubt will arise as to whether incidental costs should be made a part of the first or second element of original cost. In most cases there should be little difficulty in properly allocating expenses of this character, provided it is remembered that the first element is designed to show the difference—if there is any—between the cost to the railroad *at the time* it was acquired and the prices paid by others at that time for similar property. Other and later costs, if included with the first element of cost, destroy the value of such figures as evidence of the multipliers, if any, which can be properly used in ascertaining the reproduction cost.

The full significance of the method which has been described above can possibly be best appreciated by an outline of the form which may be used in presenting figures designed to show land values. Each parcel of land will be entered on such a sheet on horizontal lines and the proper figures for each parcel entered in vertical columns, headed as follows:

- (1) Description of parcel.
- (2) Date of purchase.
- (3) Area.
- (4) Market value of adjoining and similar lands at date of purchase.
- (5) Actual original cost in condemnation or by private purchase.
- (6) Actual cost of acquiring.
- (7) Total original cost.

(8) Ratio of market value at date of purchase to original cost.

(9) Market value of adjoining similar lands at date of appraisal.

(10) Ratio of market value at time of appraisal to railroad cost at time of appraisal.

(11) Reproduction cost.

Attention should be called to two features of this method of valuing land, neither of which can be defined until all figures for the land of a railroad have been found and tabulated. The first is whether the figures for different parcels of similar land as shown by column 6 will not be such as will introduce a question of doubt as to the propriety of including them as a portion of one of the figures used in finding the proper ratio or multiplier. In other words, the ratios shown in column 8 should unquestionably be the relation of the figures given in column 4 to those in column 5. The question to be ascertained is whether an error is introduced when 6 is added to 5 to make column 7 and the ratio is found by comparing 4 and 7. The doubt raised by this question does not affect the reliability of the method. All needed figures are presented in a table such as has been outlined above and if doubt is raised by including "the cost of acquiring land" as a portion of the figures used in obtaining the multiplier for certain lands at a particular date, they should be omitted and added—either in their original amount or raised in amount if such enhancement can be proved—to the reproduction cost after that figure has been ascertained by well established multipliers obtained from ratios of columns 4 and 5.

The second feature to which attention should be called is that the ratio given in column 10 is not necessarily that obtained for column 8. It is possible that for similar lands the ratios given in column 8 may be changing with the advance of years. Whether or not this is true can be readily shown by plotting such ratios in different years as ordinates and abscissæ and finding the probable projection of the curves thus found at the date of appraisal.

The two features which have just been briefly explained are simple and usual, and in practice would not be as complicated as might appear from a description which does not deal with actual figures. It is felt that with the data given on land sheets such as have been advocated above, there could be no question or doubt raised as to whether or not a public utility was obliged to pay more for its land than was usually the case in normal market transfers and, if so, by how much the normal market value of adjoining similar lands should be increased at the time of appraisal to show the true reproduction cost of the property.

III

DECISIONS OF THE COURTS AFFECTING
LAND VALUES

By pursuing the method previously described it is believed that the original cost of land and its cost-new at the date of appraisal will have been obtained in as accurate a manner as possible and be based on definite and logical reasoning. Objection will be raised unquestionably to the method outlined above on the ground that it is contrary to the ruling of the Supreme Court of the United States in the Minnesota rate case.¹ It is imperative, therefore, that the above suggested method be reviewed in the light of the Minnesota decision, keeping definitely in mind the fact that the fair present value of the land as a portion of the total rate base is not as yet under discussion but simply the cost-new of the land as of the date of its appraisal.

If the decision in the Minnesota rate case is studied with the object of ascertaining the opinion of the court relative to figures purporting to show the cost-new to the railroads of the lands owned and used by them, it will be found that objection was raised not to the reproduction cost—the cost-new of the land—as evidence of value, but rather to the method which had been employed in obtaining the figures presented to the court in that particular case. On the contrary the court definitely states:

“The cost-of-reproduction method is of service in ascertaining the present value of the plant, when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty” (p. 452).

The method which was used in the Minnesota Case to derive the figures purporting to show what it would now cost the railroad company to acquire its lands must be described. In that case the fair market value of adjacent and similarly situated lands, as of the date of appraisal, was first found and from that as evidence an arbitrary estimate was made of what, in the opinion of the railroad company's land expert, the railroads would have to pay. Note particularly that this figure was not the market value of the land in the proper sense of that term, but what in the judgment of an experienced railway official it would cost the railroad company to acquire the land. This included an excess which he estimated the company would have to pay over the market value of contiguous and similar property if a railroad were called upon to undertake such a reproduction of its right-of-way. The figures thus found did not, however, embrace an allowance for payments which might have to be made for improvements that possibly might be found upon the property nor for the consequential or severance damages which

possibly might have to be met, not for the expense of acquisition. The supposed additional outlays he undertook to estimate. For this purpose he increased “the ‘market value’ as stated” (*i. e., his estimate of what the railroad would have to pay*), “(in the case of agricultural lands generally multiplying it by three) and thus reached the amount set down as the ‘value for railway purposes’” (p. 445). In the cases of terminal lands the multiplier was smaller.

The court objected to figures derived in such a manner and there seems to be the best reasons for feeling that no fairminded tribunal would hesitate to agree that such a method would produce figures which were neither accurate nor convincing.

The court said:

(a) “What is termed the normal value does not satisfactorily appear” (p. 450).

(b) “It is impossible to assume, in making a judicial finding of what it would cost to acquire the property, that the company would be compelled to pay more than its fair market value. It is equipped with the governmental power of eminent domain. In view of its public purpose, it has been granted this privilege in order to prevent advantage being taken of its necessities” (p. 451).

(c) “There is no evidence before us from which the amount which would properly be allowable in such condemnation proceedings can be ascertained” (p. 452).

(d) “The cost-of-reproduction method . . . does not justify the acceptance of results which depend upon mere conjecture” (p. 452).

All of the objections of the court in the Minnesota Case are fully, definitely, and convincingly met by the method which has been presented above.

(a) The normal value of each parcel of land at the time of its acquisition and at the date of appraisal are presented as evidence. These normal values are established by figures showing the prices paid at both periods of time for voluntary transfers of adjacent and similarly situated land. These figures may be supplemented by expert opinion and checked by ratios based on assessed values. The normal value will be satisfactorily and convincingly shown, if the work of the appraiser is properly and conscientiously performed.

(b) The second objection cannot be met in any more convincing manner than by the method recommended above. The normal value at the time of acquisition of the land is given as well as the actual cost to the company. These figures will show beyond mere conjecture whether or not, and by how much, a railroad or any other public utility company has had to pay in excess of its normal value for the land which it is using for the public benefit. In such cases as the utility company had acquired its land by eminent

¹ 230 U. S. 352.

domain, the cost assigned by the courts as the fair market value to be paid by the company is entered in column 5 as a portion of the cost of the land. In other cases, where the utility company has elected not to exercise its power of eminent domain, for the reason, in most instances probably, that the land could be thus acquired more cheaply, the actual amount paid is likewise entered in column 5 against the parcels acquired in that manner.

Another feature possessed by the proposed method must be fully appreciated.

All conjectural figures based on claims for recognition of special value arising from the fact that a company owns and uses a continuous strip of land for its right of way, or a large area of land for its terminal purposes, or that its rights of way and terminals are peculiarly well suited to railway purposes, or that the land was not acquired free from encumbrances nor could be reproduced free from probably more expensive encumbrances, or similar claims for a larger reproduction value, are entirely eliminated. The present value of land derived by a method which demands that each of such claims be given its proper significance would "rest on mere expression of judgment which finds no proper test or standard in the transactions of the business world." But where land is taken by condemnation the laws are well defined as to what should be included and excluded as a portion of the fair market price to be paid for the land taken. The cost to the company as shown by the figures in column 5 include all increments of value which can legally enter and, consequently, the proposed method, being based on actual cost to the company, eliminates all expressions of personal judgment relative to special value which at the time of appraisal could be at best but mere conjecture.

Unquestionably objection will be raised to the above treatment of the special values inherent in a well situated railway on the ground that such values must have recognition in an appraisal. The answer to such an objection is clear. The present discussion is concerned simply with land values. The adaptability or suitability for railroad purposes of the land used by a railroad does not enhance the value of the land beyond the price assigned by the court in condemnation proceedings. The entire railroad property may be benefited by special advantages in location, as would be shown by low operating costs, density of traffic, or some similar factors which may or may not be given recognition in some other portion of the appraisal. The cost-new of land is measured by what the road would have to pay to acquire it in condemnation proceedings and by nothing more. Moreover, curves based upon the difference between the normal market

value and the cost to the company of different classes of land in different years would seem so convincing, to one trained in their use, that it is difficult to believe that the information derived in this way would not be equally convincing to a court or to a ratemaking tribunal.

(c) The third objection—that the court had no evidence of the cost to the company of the land obtained by it through condemnation proceedings—is entirely removed by the proposed method, wherein the cost of the land obtained by condemnation proceedings is presented as a distinct figure separated from all other costs of acquisition and damages, and similar figures are given where parcels have been purchased privately. These figures, together with the values of adjacent and similar lands at the date of the acquisition of the railroad lands, establish a ratio that will be irrefutable if the work of the appraiser has been done well and in sufficient detail.

(d) The fourth objection—that the cost-of-reproduction method depends upon mere conjecture when applied to land—is entirely removed if evidence as direct as that afforded by the proposed method is prepared and presented to the court.

In concluding the discussion of the Minnesota decision as bearing upon the ascertainment of the reproduction cost of land, one more quotation only is necessary.

The court said:

"The conditions of ownership of the property and the amounts which would have to be paid in acquiring the right-of-way, supposing the railroad to be removed, are wholly beyond reach of any process of rational determination" (p. 452).

This statement would appear to be a sweeping condemnation of any method that might be devised to ascertain the reproduction cost of land. Any such interpretation would be unfair. If an extreme case is taken as an example in which the figures derived by the above suggested method showed that a railroad company in every purchase that it had made in the past had paid, as the result of condemnation proceedings, let us say, twice as much as the usual prices paid by others for similarly situated adjacent lands, would a court say that the reproduction cost would not be twice the normal market value of similar lands at the date of the appraisal? Clearly a fair-minded tribunal could not but hold that such a ratio should be used and that the reproduction cost had been ascertained by a "process of rational determination." It is but a step from such an extreme case to practical cases wherein the multipliers for lands of different characters have been found carefully as above advocated.

The objection on the part of the court in the Minnesota Case was directed against the acceptance of reproduction cost, which admittedly depends upon hypothetical considerations, as indicating the fair present *value* of land—a value to be made a portion of the fair rate base of an entire property. This objection appears to have had particular weight in the mind of the court for the reason that multipliers—even when their accuracy has been convincingly proved—are applied to the normal market value of adjacent land, which value may have been augmented by the existence and operation of the railroad.

These objections are not directed against reproduction cost as one evidence of value, provided the reproduction cost has been obtained in an accurate and convincing manner, but rather against the figures representing such cost as showing the fair present *value* of the land in a particular case.

This is an entirely different question from those which have been above discussed wherein only *costs* were involved.

IV

FAIR PRESENT VALUE OF LAND

The fair present value of a property—the fair basis for rates—is not the reproduction cost necessarily and is not the original cost necessarily, but is a fair figure ascertained for each particular case when these two figures, as well as other facts and figures, have been properly found and weighed.

Unquestionably the normal market price of land has been increased by the growth of the community due largely in most places to the presence of the railroad. Unquestionably also, if the normal market price of the land is increased by a well established multiplier the reproduction cost of the land thus found would be large, but it would show with all reasonable accuracy what it would cost to reproduce the land at the date of the appraisal. It would show what it would cost under existing conditions to acquire the land now used for railway purposes. It would give a measure of a maximum beyond which no reasonable claim for a fair rate base could be made. It is this evidence which is needful and useful in every valuation even though the reproduction cost of land may never be taken as a portion of the fair rate base.

The original cost is likewise evidence of the fair rate base and evidence of the same character as reproduction cost even when that latter cost is inflated, as that figure appeared to the court to be in the Minnesota case, by the prosperity of the community in which the land is situated. But the original cost less depreciation is, in the majority of cases, the minimum, just as the reproduction cost is the maximum cost, and between

these two costs the fair value must be assigned with fair and impartial judgment in the light of all other relevant facts and figures.

The court in the Minnesota Case defined the fair value of the land in the following words:

“Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed, apart from any improvements it may make, cannot properly extend beyond the fair average of the normal market value of land in the vicinity having a similar character. Otherwise we enter the realm of mere conjecture. We therefore hold that it was error to base the estimates of value of the right-of-way, yards and terminals upon the so-called ‘railway value’ of the property. The company would certainly have no ground of complaint if it were allowed a value for these lands equal to the fair average market value of similar land in the vicinity, without additions by the use of multipliers, or otherwise, to cover hypothetical outlays” (p. 455).

It is seen that the court took a mean figure between the reproduction cost and the original cost as the fair value of the land in that particular case. This decision, however, establishes no precedent whatever upon which a contention can be based that, in all other valuations of railway lands, the fair value that should be included in the fair rate base must be “the fair average market value of similar lands in the vicinity.” The above decision was for a particular case in which possibly the increase in the value of the lands had been very great. It seemed to the court, in the light of all information before it relative to the property, that such a figure was just. It is certain that if the cost-of-reproduction of the land, including all elements of cost incident to its acquisition, was equal to the total original cost, other conditions remaining the same as in the case of the Minnesota railroads, the court would not have established the normal market value of adjacent lands as the value to be assigned to the lands as a portion of the fair rate base of the entire property. It had cost the company considerable sums of money to acquire the lands for railroad purposes and such costs are legitimate capital expenditures. If the value of adjacent similar lands increases with the prosperity of the community, the reproduction cost will become greater than the actual original cost, but the fair present value—the fair rate base—does not necessarily follow the increase in reproduction cost. The fair present value cannot be assigned by arbitrary rules but by well informed judgment in each particular case.

Objection will be made unquestionably on the part of many public utility corporations to a method of ascertaining fair present value which necessitates the

use of personal judgment, and those caring for corporation interests will demand that the fair present value of land be ascertained and reported as a portion of the fair rate base. Furthermore, it may possibly be claimed that the instructions, given to the Interstate Commerce Commission in the federal law requiring the valuation of all railroad property, demand that the fair value of the railroad lands be found and definitely assigned for the lands as a whole or for each parcel. In support of this the following words of the Act may be cited:

"Second. Such investigation and report shall state in detail and separately from improvements the original costs of all lands . . . and the present value of the same, and separately the original and present cost of condemnations and damages or of purchase in excess of such original cost or present value."

A careful study of this portion of the Act shows definitely that the expression "present value" as therein used does not mean the "fair present value" of the

lands, a value which can be made a portion of the rate base upon which a fair return can be earned, but rather the normal present average market value of the lands. This value can be obtained from the value of adjacent similarly situated lands derived in the manner described above.

The railroads and all other public utility companies must rely upon the courts and rate-making tribunals to ascertain the fair present value of each property. The best interests of the companies, and of the public as well, will be conserved by the derivation of reliable and convincing figures which will show without conjecture what the companies' property actually has cost, as well as what it would cost to reproduce the same property at the time of an appraisal.

The method, which has been here advocated, eliminates conjecture and presents figures that should be convincing. The difficulties and expense involved in obtaining them are admittedly great, but only in this way can proper evidences of the present value of a company's property be obtained.

LAND VALUES UNDER THE MINNESOTA RATE CASE

BY MR. THOMAS D. O'BRIEN

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It was supposed, at least by some, that with the decision of the Supreme Court in the Minnesota Rate Cases, 230 U. S. 352, the impropriety of adding to the normal market value of lands "by the use of multipliers, or otherwise, to cover hypothetical outlays" had been finally established. Mr. Hayes, however, seems to insist that the decision amounted to no more than a condemnation of the particular method adopted by the Master in those cases.

After expressing his concurrence with the conclusion of the court in those cases, Mr. Hayes points out the distinctions which, he claims, exist between the methods rejected by the court and those now advanced by him. A fair statement of the position taken by the learned gentleman is that:—

In determining land values by ascertaining cost of reproduction (reacquisition), it is allowable to find a cost greater than the normal present market value of the lands.

I insist upon the contrary, under the decision in the Minnesota Rate Cases, that while reproduction cost *reasonably applied*, is of service in ascertaining present value,—the cost of acquisition of land must be taken to be its normal market value determined by "the fair average market value of similar lands in the vicinity, without additions by the use of multipliers, or otherwise, to cover hypothetical outlays."

In the Ames case (169 U. S. 54), the court, in enumerating the elements to be considered in arriving at a fair value,

gave amongst others "the present as compared with the original cost of construction." This language is taken to require a finding of reproduction cost, and this again is assumed to imply in the case of land, something more than actual present market value.

The Ames case did not define the method to be employed in ascertaining present cost, and the complainants in the Minnesota case felt at liberty to adopt the literal meaning of the word "reproduction" and assume the non-existence of the railroad, and the necessity for its present acquisition and construction. These assumptions were indulged in as to land, and also as to every other item of property constituting the plant.

It is true, as pointed out by Mr. Hayes, that there was first added to market value an indefinite amount to find railway value, and this amount was again increased by the use of multipliers, but the fact that two additions were made to market value was not a controlling consideration with the court. A reading of the decision is entirely convincing that the error condemned by the court consisted in adding to market value *any* amount upon *any* conjectural hypothesis.

The proper method for ascertaining "the present cost of construction" required by the Ames case, has come before the Supreme Court on several occasions, but as applied to land it would seem that the last word was written by Mr. Justice Hughes in the Minnesota cases, and his language cannot be interpreted to justify any addition to market value. A few quotations are sufficient.

"These are the results of the endeavor to apply the cost of reproduction method in determining the value of right of way. It is at once apparent that so far as the estimate rests upon a supposed compulsory feature of the acquisition, it cannot be sustained. . . . " (Page 450.)

"moreover, it is manifest that an attempt to estimate what would be the actual cost of acquiring the right of way, if the railroad were not there, is to indulge in mere speculation The assumption of its non-existence, and at the same time, that the values that rest upon it remained unchanged, is impossible, and cannot be entertained. The conditions of ownership of the property, and the amounts which would have to be paid in acquiring the right of way, supposing the railroad to be removed, are wholly beyond reach of any process of rational determination. . . . (Page 452.)

and finally;

"Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed, apart from any improvements it may make, cannot properly extend beyond the fair average of the normal market value of land in the vicinity having a similar character. Otherwise we enter the realm of mere conjecture. We, therefore, hold that it was error to base the estimates of value of the right of way, yards, and terminals upon the so-called railway value of the property. The Company would certainly have no ground of complaint if it were allowed a value for these lands equal to the fair average market value of similar land in the vicinity, without additions by the use of multipliers, or otherwise,

to cover hypothetical outlays. The allowances made below for conjectural cost of acquisition and consequential damages must be disapproved; " (Page 455.)

It is apparent that the objection of the court was to *any* allowance above market value, and it would seem that such objection must be persisted in.

The proposed formulae, by its own terms, destroys its utility; thus *market value* is to be first determined, and this amount *increased* by a multiplier. Such a course necessarily results in an allowance *greater* than market value; therefore greater than real or true value, greater than the amount which the Supreme Court placed as the limit which the companies could demand.

If the additional or extra amount secured by the use of this multiplier cannot be included in an actual proceeding, what practical reason can be given for its ascertainment? It proves nothing, establishes nothing. It is an attempt to give a literal interpretation to a mere form of expression, and to establish values which have no existence except in the assumption itself.

To adopt, in order to value a plant, the assumption of its reproduction is entirely reasonable, if reasonably applied. In the item "land," however, the assumption should never be used to establish as "reproduction cost," an amount higher than market value determined by the value of similar lands in the vicinity.

THE MEASUREMENT OF LAND VALUE

BY EDWARD W. DOTY

With The Columbus (Ohio) Railway, Power and Light Company; Former Member, The Public Utilities Commission of Ohio

As long as it shall be deemed necessary to obtain what is usually called the physical value of railroads and utilities, there ought to be some better method of measuring that part of that value called land value than the rule-of-thumbs that usually obtains. It seems strange that the improvement in making measurements of other things should not have been accompanied by some more widespread improvement of measuring land value than has yet made itself felt. That land value is not tangible is true, but land is tangible and its use is well understood and is measured in some fashion by a considerable portion of every community every day.

Probably there is no part of the valuation problem where there is such a mixture of thought and expression, such a misuse of terms, as there is in the valuation of land. The underlying difficulty appears to me to be the idea, which we all possess to a greater or less degree, that land value is a certain, definite, determinable amount, or sum or price.

We talk of "market value" of land in cities as if land sites, no two of which are or can be alike, can be said to have "market value." We express our judgment of land value in the price of the square foot, when the usefulness of any two square feet, either in the same site or in two separate

sites, is scarcely ever the same. We attempt to compare the value of one site with that of another, often when no factor of one is duplicated in the other. We think that it is possible to compare the value of one site with the value of all neighboring sites, by a wave of the hands and the usual qualifications of an expert.

The cause for the inadequacy of land valuation as it is practiced in our courts and before our commissions is the absence of any attempt to carry out the same principles that are employed in the valuation of tangible property.

In the valuation of anything there must be a recognition that there are two acts performed: First, the mental operation; second, the mathematical operation. In land valuation there has been a mixture of these two acts. Experts have been solving only the simplest valuation problems by a proper separation of these acts. When problems that are intricate, involving as most problems of high values in cities always do, the presence of various factors of value with varying degrees of effect, these experts usually ignore mathematics and combine the mental and mathematical acts. This is the direct cause of the wide discrepancies found in expert testimony touching land valuations.

In order to perform the mental part of the task of appraisal

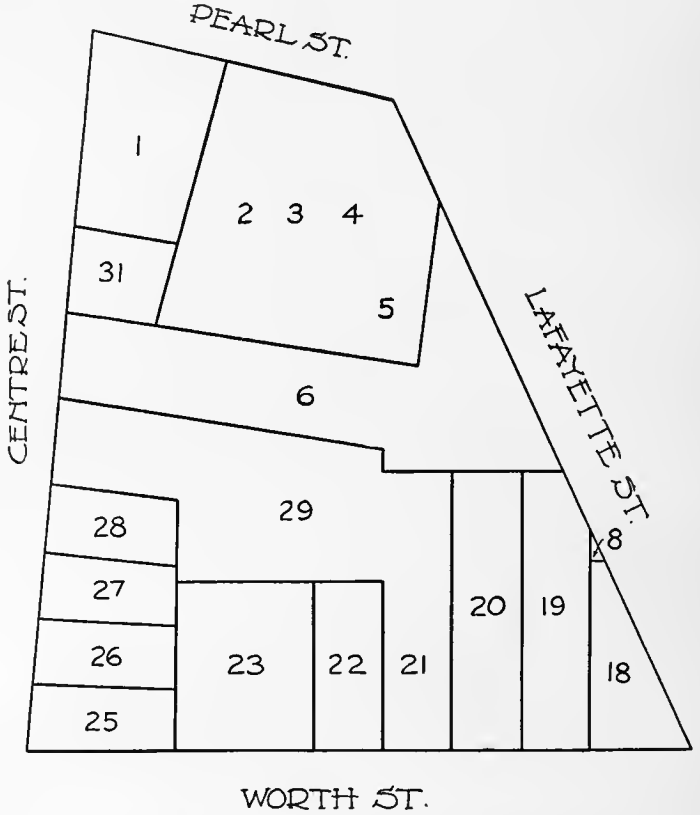
easily and satisfactorily, and in order to perform the mathematical side of the task at all, there must be a unit of quantity. This is exactly what is provided for in the task of valuing anything else, such as the yard for cloth, the pound for sugar, the ton for coal, the kw. for electric energy, and so on. What is absolutely necessary for site valuation is a unit of quantity that will have a proper basis for its existence. Any unit of quantity must be large enough to be effective when used and small enough for the human mind to grasp. Land sites have three factors that affect their usefulness and therefore their value—size, shape and location. If our unit of quantity undertook to include all three or any two of these factors, there would result the same confusion that exists among appraisers now. Let us assume a given size and a given shape, leaving only location to be included in any expression of value or price. This may be done by assuming a foot wide on the street line and 100 feet deep from the street line, with the side lines at right angles. Let this unit foot always be assumed to come to the street far enough from a side street to be outside of any usefulness traceable to that or any other street, except the one street.

When this unit of quantity is used by any two persons, any expression of value thereof is easily understood by both and any differences of opinion between the two would be traceable only to differences as to the value of location. This would base land valuation in cities upon the opinion of the value of the usefulness of the streets and other means of accessibility. This method opens up a very wide source of information and opinion for there are many more people in any community who know more about the relative usefulness, and therefore the relation of value, of their streets, than there are who know about the value of specific lots or sites. And after all it is the valuation of the streets that is of prime importance; one street is more useful, or more attractive, or nearer some business center or some park, than is another, and there is usually a well defined difference of opinion in the community as to the effect of those differences.

The attempt to base land valuations upon sales is one of the most ridiculous things that we talk about. I say, ridiculous, because no one ever actually uses a sale for any conclusive valuation. The reasons for this are many and are really very obvious. Usually there is no sale anywhere near the property to be appraised—this is especially so in high priced districts in our larger cities. When there is a sale its terms are usually not known; and when they are known it is often found that there are some conditions that would affect the cash price. And if there is found a sale, at a fair price, and the terms all public, it is then always found that the factors affecting the value of the property used as the standard and the factors of the property to be compared and therefore valued, differ so materially that no comparison can be easily and therefore effectively made. If one will go over the testimony of experts who are attempting to value high priced city sites, such as are found in cities like Philadelphia, New York, Chicago, Cleveland and other places, it will be found that there is absolutely little or no relation

between sales and the valuation given. Different experts will bring in quite different results from the sales, assuming they use sales figures at all.

An appraisal a year or two ago, made for the purpose of condemnation, of the block in New York City bounded by Pearl, Lafayette, Worth and Centre streets, illustrates what happens when the opinion of experts is depended upon for a valuation. There were six expert land appraisers who undertook to give opinion as to the value of the various plots that went to make up this block. I insert here a diagram of this block showing the shapes of the fifteen lots, no two of which are alike; these lots are numbered. The appraisers will be designated by the letters B, D, G, K, P and R. The various estimates of value set forth were made by these six expert appraisers. It is interesting to compare the figures with the diagram that goes with them. It is an exhibit of what we are accustomed to when listening to testimony based as it usually is, upon the rule-of-thumbs method of making a valuation.



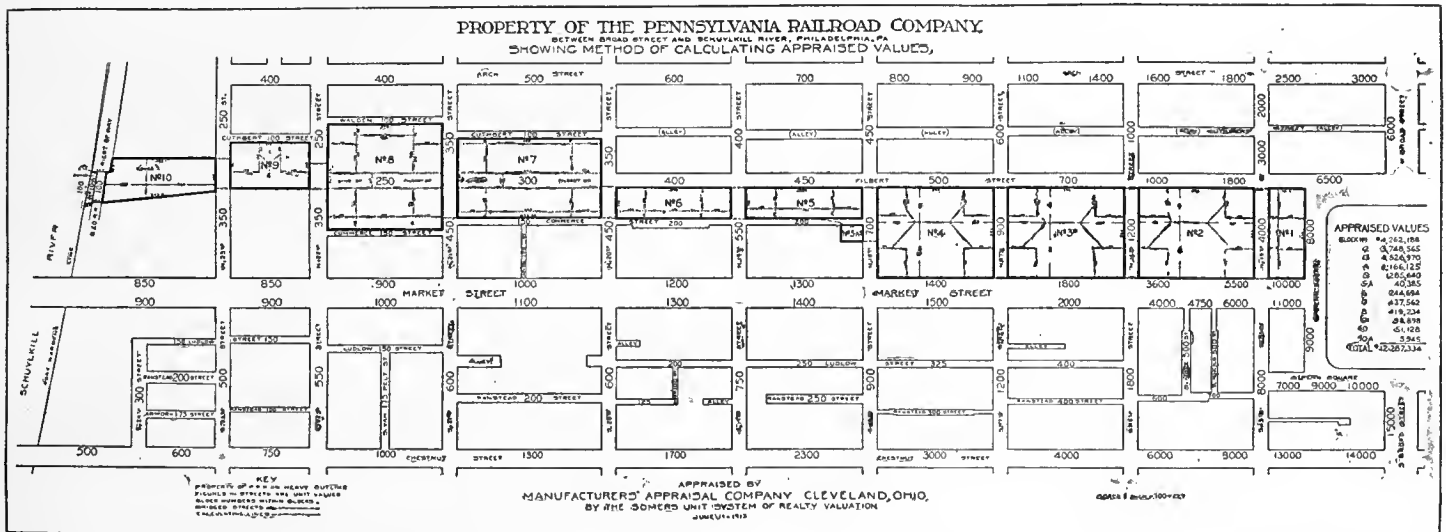
Lot No.	"B"	"D"	"G"	"K"	"P"	"R"
1	\$115,500	\$174,060	\$120,000	\$130,000	\$105,000	\$106,500
2 to 5	173,000	305,635	190,000	185,000	145,996	274,500
6	155,000	170,000	160,000	152,500	121,400	150,000
8	1,000	3,000	5,000	5,000	5,000	2,890
18	40,000	94,100	47,000	37,000	32,832	69,600
19	34,000	58,240	47,000	40,000	40,754	57,000
20	30,000	41,500	33,000	31,000	.....	40,550
21-29	120,500	99,160	96,000	104,000	98,464	101,650
23	48,000	64,150	50,000	55,000	53,609	67,500
25	49,000	60,000	40,000	40,000	40,672	43,935
26	31,000	43,750	28,000	27,500	27,880	33,000
27	33,000	41,215	25,000	27,000	28,240	32,250
28	29,000	35,200	26,000	26,000	27,518	30,000

It is very evident from the foregoing results that these appraisers used different standards for the basis of their

opinion. What those standards were was never disclosed. If they had been taught to appraise the value of the streets and had known how to apply that valuation to the sites contiguous to the streets, there would not have been the wide variations; indeed, any variations would have been traceable to a difference of opinion as to the valuation of the streets and would not include differences not only of the value of the streets, but also of the amount of the street value that may be said to be absorbed by each of the lots that go to make up this block. There may well be a difference of opinion as to quality but there ought not to be any difference of opinion as to the mathematics that may be necessary to translate the effect of that quality when ex-

The figures in the streets are the prices of the unit foot for each block. The dotted lines in the blocks of the terminal (those bounded by the heavy black lines) show the areas that are affected by the various streets or combination of streets. The value of each section and of the whole terminal will be found in the area set apart for Penn Square.

It will be observed that in making this appraisal the judgment of land value was exercised over an area from Chestnut Street on the south to Arch Street on the north and from Penn Square to the river, nearly five times the area that was actually to be appraised. It is apparent that the value of any lot in this area could be computed and compared with the value of any other lot either computed



pressed in terms of price per unit of quantity, into a total value, just as is done a million times a day as to the value of other things.

I am not going into the intricacies of the Somers System, which is the mathematics of the appraisal of land sites; suffice it to say that the system has been used in the land appraisal of more than thirty American cities, it has been used in Ohio for the valuation of land sites for public utilities, and is the only method that I know of that answers every demand of a system not only as to the easy problems of the appraisal, but the intricate and complicated problems as well.

An illustration of the use of the system is the appraisal of the land value of the site occupied by the Pennsylvania railroad company in Philadelphia, known as the Broad Street Terminal. The figures are based upon opinion in the summer of 1913, but probably there has not been any very great change since then. I append the map of this terminal, running from Penn Square to the Schuylkill River.

or known in some other way. This is the only method of comparing the city sites to be appraised with the value of neighboring and contiguous lands, that has ever been devised.

Whether this valuation meets the approval of any one in Philadelphia or not, is not the important question; the important question is: Is this an analysis that gives due weight to every factor that affects the value of this terminal? I would say in passing that this appraisal has been public property for about two years, and thus far no one has successfully challenged the valuation made.

The difference between these two appraisals is the difference between an analysis upon a secret and ill-defined basis, and an analysis upon an open, public and well defined basis; between the rule-of-thumbs and the rule of mathematics; between an attempt at impossible mental act and a substitution therefor of the natural and consequently effective method that comes from a proper appreciation of what the human mind was built for and how it works.

PRINCIPLES TO BE APPLIED IN VALUATION OF LANDS USED FOR THE PURPOSE OF A COMMON CARRIER

BY A. E. HELM

Commerce Counsel, Public Utilities Commission of Kansas

It is not my purpose to discuss the methods which shall be adopted or used in collecting and stating the facts required to be ascertained to comply with the requirements of the Act which commands the Interstate Commerce Commission to make a valuation of railroad properties. These are questions for the consideration of engineers and accountants. I agree with the representatives of the carriers that the various cost figures mentioned in the Act should be classified and reported in the fullest detail. It is not with the collection of these cost items that I am concerned, but rather as to the use which shall be made of the figures in determining the proper rate base to be used in rate cases.

PROVISIONS OF THE VALUATION ACT

The first part of Section 19a of the Act directs the Interstate Commerce Commission, as therein provided.

"To investigate, ascertain and report the value of all the property owned or used by every common carrier subject to the Act."

The second paragraph of the Section provides that

"such investigation and report shall state in detail and separately from improvements the original cost of all lands, rights of way, and terminals owned or used for the purposes of a common carrier, and ascertained as of the time of dedication to public use, and the present value of the same, and separately the original and present cost of condemnation and damages or of purchase in excess of such original cost or present value."

My remarks will be confined to the question as to what consideration should be given in rate cases to the present value of railroad rights of way and terminals, so far as such present value is in excess of original cost.

THE CARRIERS' CONTENTION

The carriers are contending that the Commission shall investigate and report the present value of all lands used for the purposes of a common carrier as a part of the cost of reproduction new and that such present value shall be determined by ascertaining the present market value per unit of area, of the tract of land out of which each particular piece of railroad land was taken, as a basis for fixing the normal present value per unit of area of each such particular piece of railroad land. This so-called normal value is to be increased by a multiple of two and one half or three to cover the excess cost over the normal value of lands of similar character in the same vicinity which it is claimed experience shows that railroads are required to pay for their rights of way, etc. To the amount thus ascertained it is proposed to add a further sum to cover the increased value of the lands for railroad use arising merely from the connection of the several parts.

The total value of railroad lands so determined considered in connection with other items of cost of reproduction new is proposed to be used as the chief basis for ascertaining the "fair value" mentioned by the courts for rate making purposes.

It is apparent to every one in this conference what the effect will be upon railroad rates and upon the commerce of the country if this program of the carriers is allowed to be carried out in all its details.

RAILROADS ARE PUBLIC HIGHWAYS

The determination of the principles which should be applied in ascertaining the just and equitable value of lands used for the purpose of a common carrier requires a consideration of the nature of the property to be valued and the purpose for which the value is to be used.

In the first place, it should be understood that the railroads are public highways, dedicated to the public use. The companies operating and managing them are not the private owners of the railroads. The proprietary rights remain in the state. Those who manage and supervise their use are public agents, charged with the duty of performing a service for the public. To admit the existence of any other relation would be to deny the public character of these roads. There cannot be private property in the lands used for a right of way, any more than there can be private property in a navigable waterway, a country road, a city street, or any other highway or thoroughfare of commerce and travel. This proposition was never more earnestly asserted or clearly demonstrated by anyone than by one of Pennsylvania's most able and distinguished jurists and statesmen—the late Jeremiah S. Black. In a speech delivered before the Judiciary Committee of the Pennsylvania Senate at the Session of 1883, Judge Black said:

"It will, I think, be admitted by all impartial persons of average intelligence, that the companies are not the owners of the railroads. The notion that they are is as silly as it is pernicious. It is the duty of every commercial, manufacturing or agricultural state to open thoroughfares of trade and travel through her territory. For that purpose she may take the property of citizens and pay for the work out of her own treasury. When it is done she may make it free to all comers, or she may reimburse the cost of levying a special tax upon those who use it, or she may get the road built and opened by a corporation or an individual and pay for it by permitting the builder to collect tolls or taxes from those who carry and travel on it. Pennsylvania has tried all these methods with her turnpike, canals and railroads . . . but in all these cases the proprietary rights remained in the State and were held by her in trust for the use of the people. Those who run the railroads and canals are always public agents. It is impossible to look at them in any other light, or to conceive how a different relation could exist because a railroad which is not managed by public agents cannot be a public highway."

Judge Black further called attention to the decision of the Supreme Court of Pennsylvania in the case of the *Erie and N. E. R. R. Co. vs. Casey*, where he points out that

"It was determined that a railroad built by authority of the state for the general purposes of commerce is a public highway and in no sense private property; that a corporation authorized to run it is a servant of the state as much as an officer legally appointed to do any other public duty; as strictly confined to the laws and as liable to be removed for transgressing them."

The same principle has been universally recognized by all of the state and federal courts where the right of the state to vote bonds and levy taxes to pay the same in aid of the construction of railroads has been considered. No authority can be found in any constitution for voting public aid to a private business, and no court has ever upheld the authority to do so.

It is true that courts have frequently used language which might seem to indicate that they were inclined to hold that railroad corporations are the owners of the roadbed and transportation facilities used by them in the transaction of their business as a common carrier. Wherever such expressions have been used by the court it will be found that the question as to the nature of the ownership of the railroads was not material and not directly involved in the case under consideration.

On the other hand, no case can be found where the courts have expressly denied the public character of the railroads. The right of the state to grant to railroads the power of eminent domain, to make grants of public lands to them, to vote bonds and aid of various kinds, on account of their public character, has been everywhere admitted. The right of the government to regulate their business is no longer denied. This regulation extends to the service performed, the charges assessed for the service, and the maintenance of the roadbed and equipment, so as to secure the safety of the public in the operation and use of the railroads. In case of the abandonment of any portion of the right of way, it reverts the same as other abandoned highways. The right of the government itself to take over these public highways and operate them in the interest of the public, by paying to the companies just compensation for the rights and privileges which they have in them, is universally admitted, and the expediency of doing so has been frequently discussed in recent years. No railroad has the right to tear up its tracks and discontinue its business of a common carrier without the consent of the state. In case a railroad, by reason of mismanagement, or for other reasons, becomes incapable of meeting its financial obligations, the courts of the country take charge of the property and operate it through receivers for the benefit of the public. No matter what the company's financial needs may be, it is not allowed to disregard its obligations to the public.

The act of Congress that requires the valuation of the railroads recognizes that the lands constituting the rights of way and terminals are not private property, but that they are dedicated to public use.

There can be no question as to the soundness of these principles. The railroads are public highways; all pro-

prietary rights in the lands used as rights of way and terminals are vested in the state. It follows that such lands cannot be made the subject of private speculation by the public agents that have been authorized by the state to operate these public highways.

If these propositions are true, no allowance can be made by courts or commissions for the unearned increment of value over and above the original cost of rights of way and terminal lands in fixing a basis upon which to compute a fair rate of return out of rates on the railroad property devoted to the public use.

DECISIONS OF THE COURTS

I am aware that attorneys for the railroads contend vigorously that this matter has been settled by the Supreme Court of the United States against the proposition which I am here asserting, and they point to numerous decisions of that great tribunal, which they claim supports their contention.

Among these decisions are the following:

Regan vs. Farmers Loan & Trust Co., 154 U. S. 369;
Smythe vs. Ames, 169 U. S. 466;
San Diego Land & Town Co. vs. National City, 174 U. S. 739;
San Diego Land & Town Co. vs. Jasper, 189 U. S. 439;
Stanislaus County vs. San Joaquin & Kings River Canal & Irrigation Co., 192 U. S. 201;
Interstate Commerce Commission vs. Chicago Great Western Ry. Co., 209 U. S. 108;
City of Knoxville vs. Knoxville Water Co., 212 U. S. 1;
Wilcox et al. vs. Consolidated Gas Co., 212 U. S. 19;
Minnesota Rate Case, 230 U. S. 352;
Northern Pacific Ry. Co. vs. State of North Dakota, U. S. Supreme Court, decided March 8, 1915;
Norfolk & Western Ry. vs. Conley, U. S. Supreme Court, decided March 8, 1915;
Des Moines Gas Co. vs. Des Moines, U. S. Supreme Court, decided June 14, 1915.

An examination of the cases will disclose the fact that the court has expressly refrained from laying down any general rule by which to test the reasonableness of rates or the principles to be applied uniformly in all cases. On the contrary, the court has repeatedly said that the question should be determined upon the facts of each individual case.

In the *Reagan* case there was no question as to the value of unearned increment in land. The case was decided upon admitted facts which showed that the road has never paid any dividends on the money actually invested in the stocks of the road and had not paid the full amount of interest due on the bonds. The court held that rates which did not produce any returns upon the actual investment in the railroad properly made by the stockholders were unreasonable and could not be enforced.

In the leading case of *Smythe vs. Ames* the Supreme Court of the United States enumerated a number of facts which should be considered in arriving at a proper value of railroad property as a basis for fixing rates. The fourteenth paragraph of the syllabus which expresses the views of the court upon this matter, is as follows:

"To ascertain the value of railroad property, the cost of construction and improvements, the amount and value of

its bonds and stock, its earning capacity and operating expenses, are to be considered."

Nothing was said directly by the court in this case concerning the unearned increment of land, and that question was not involved.

The case of *San Diego Land & Town Company vs. National City* involved the question of the reasonableness of water rates. The specific question as to what consideration should be given to the value of the unearned increment in lands was not considered.

The case of *San Diego Land & Town Company vs. Jasper* was also a case in which the reasonableness of rates fixing prices for water rights was considered. No question of the value to be placed upon unearned increment in lands was before the court.

The case of *Stanislaus County vs. San Joaquin and Kings River Canal and Irrigation Company* was another irrigation case, and the court again stated the principle which it had announced in the two San Diego Land Company cases, to the effect that rates should be fixed upon a basis which would "under all the circumstances be just to the company and to the public."

In the case of *Interstate Commerce Commission vs. Chicago Great Western Railway Company* the court considered the validity of an order of the Interstate Commerce Commission finding that there was a discrimination in the rates charged by the railroad upon livestock as compared with the rates upon dressed meats. No question of the value of the property of the railroads was before the court and no decision upon that question was made.

The case of *City of Knoxville vs. Knoxville Water Company* was a water rate case. No question as to land value was considered and what the court there said concerning valuation of tangible property had reference to the depreciated tangible property of the water works company.

The case of *Wilcox et al. vs. Consolidated Gas Company* considers only the question of regulating the rates for the sale of gas in the city of New York by proper rate making authorities. The only land referred to was that upon which the plant of the company is situated. In passing upon the question, Mr. Justice Peckham says:

"And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates, has increased in the value since it was acquired, the company is entitled to the benefit of such increase. That is, at any rate, the general rule. We do not say that there may not possibly be an exception to it, where the property may have increased so enormously in value as to render a rate permitting a reasonable return upon such increased value unjust to the public. How such fact should be treated is not a question now before us, as this case does not present it. We refer to the matter only for the purpose of stating that the decision herein does not prevent an inquiry into the question when, if ever, it should necessarily be presented."

The court here clearly saw the danger of applying the general rule claimed by the carriers without exceptions.

It will be noted that Justice Peckham points out that it

is the property which "legally enters into the consideration of the question of rates" which is entitled to the benefit of such increase.

Again, the court expressly refrained from passing upon the question in a case "where the property may have increased so enormously in value as to render a rate permitting a reasonable return upon such increased value unjust to the public." That question was left open to be considered, "when, if ever, it should necessarily be presented."

We believe the time has now come when it is necessary to consider it.

In the Minnesota Rate case the Supreme Court condemned the valuation approved by the master in that case, which included an allowance for the value of lands over and above the investment therein, and also over and above the market value of lands in the vicinity having similar character. In passing upon this feature of the case, Mr. Justice Hughes said:

"The increase sought for 'railway value' in these cases is an increment over all outlays of the carrier and over the value of similar land in the vicinity. It is an increment which cannot be referred to any known criterion, but must rest on a mere expression of judgment which finds no proper test or standard in the transactions of the business world. It is an increment which in the last analysis must rest on an estimate of the value of the railroad use as compared with other business uses; it involves an appreciation of the returns from rates (when rates themselves are in dispute) and a sweeping generalization embracing substantially all the activities of the community. For an allowance of this character there is no warrant."

This decision does not recognize the right of carriers to earn a return upon the unearned increment in the lands used by them for rights of way and terminals. On the contrary, so far as it speaks upon that question, it most emphatically disapproves any such allowance.

In the case of the *Northern Pacific Railway Company vs. State of North Dakota*, decided March 8, 1915, the court decided but one question—that a railroad company has a right to earn a profit upon each service rendered. No question of the values of land or even the value of the railroad property itself was considered.

In the case of *Norfolk & Western Railway Company vs. Conley*, decided March 8, 1915, the legislature of West Virginia had established a two-cent passenger rate in that state. The actual expenses of the plaintiff for carrying on its passenger traffic operating under this law for the years 1908 and 1909 were \$1,552 greater than its receipts for that traffic, and the court held that such a law was unconstitutional and specifically said in its opinion that it was not necessary to determine the value of the property devoted to that traffic, and no value of any of the property was considered by the court.

In the Des Moines Gas Company case the Supreme Court upheld the master in his finding "that there was neither justice nor equity in requiring the people who had been at the expense of paving the streets to pay an additional sum for gas because the plant when put in would have to be at the expense of taking up and replacing the pavements in building the same."

The master also held that such added value was wholly theoretical when no benefit was derived therefrom, which holding was upheld by the Supreme Court.

None of the above cases, nor any others to which my attention has been called, support the claim of the carriers that the courts have held that the unearned increment in land used for railroad right of way and terminals is to be added to the cost value for rate making purposes.

As was said by Mr. Justice Hughes in the Minnesota Case:

"It is manifest that an attempt to estimate what would be the actual cost of acquiring the right of way, if the railroad were not there, is to indulge in mere speculation. The railroad has long been established; to it have been linked the activities of agriculture, industry and trade. Communities have long been dependent upon its service, and their growth and development have been conditions upon the facilities it has provided. The uses of property in the communities which it serves are to a large degree determined by it. The values of the property along its line largely depend upon its existence. It is an integral part of the communal life. The assumption of its non-existence, and at the same time that the values that rest upon it remain unchanged, is im-

possible and can not be entertained. The conditions of ownership of the property and the amounts which would have to be paid in acquiring the right of way, supposing the railroad to be removed, are wholly beyond reach of any process of rational determination."

CONCLUSION

Everyone must admit that the increment in land values which comes by reason of the development of the country and the activities of the people living in its vicinity is created entirely by the people themselves, and if such increase in value is to be used as a reason for increasing freight charges, it follows logically that the more the people contribute to the value of the railroads, the more they should be required to pay for the service rendered by these transportation companies.

If the courts have sanctioned any such a doctrine as this it is time for them to recede from it, otherwise the people through their lawmaking power will soon direct the courts as to what are their constitutional limitations in the matter of making rates, which is clearly a legislative function.

DISCUSSION

HON. JOHN M. ESHLEMAN

Former President of California Railroad Commission

I am not scheduled to be on the program in this discussion. I have been asked to say a word or two. I could disagree quite successfully both with the views of Mr. Hayes and Judge Helm, but there is no time now to state my views, and I would not disagree so substantially from the results, particularly those of Judge Helm. I, however, want to say now that there is a danger in this agency theory, and a very great danger from the standpoint of public regulation. The California Commission ran up against that danger, and, while the theory that we advocate brings about a very similar result, still we rejected the agency theory officially while I was on the Commission of California.

Briefly, that danger is this: We have utilities that are newer than railroads. There was a time when a gas company was not a utility; there was another time when electrical companies were not utilities; there was still another time when a telephone company was not a utility; and there was another time when an irrigation company was not a utility. The Supreme Court of the State of California held in a well-contested case that we have been trying to get them to overrule ever since, that in effect what an agency said about its property determined its status, not what it actually did. The Supreme Court of the United States in the Stanislaus Water case practically sustained that position. In other words, an irrigation company down in the southern end of the state, entered into an arrangement whereby it sold water only to those with whom it made contracts and it determined the contracts in advance. Five hundred thousand acres of desert land and 50,000 people, seven or eight cities, one of them of 7,000 people, are all dependent upon this particular

water company and it is not subject to any regulation in the slightest degree. That may be startling. That is the fact in California, because of this very agency theory, because you cannot take a man's property against his will, and where you have an agency there must be some dedication, so the Supreme Court of California says, on the part of the agent in control of the property; that is some voluntary giving. Therefore as to railroads and all of these others that have done things that constitute a dedication, there is no danger, but for the future, you can take the decision of the Supreme Court of California in the Thayer case, and under it, relieve an electrical company, for example, for all time from regulation. I cannot go into this in detail, but suffice it to say, if the creation of an agency requires the voluntary assent to the burden of the agency by the one creating it, then the agency theory will always carry the danger with it, to which I have referred when we are dealing with public utilities. The theory I have advocated and that the California Commission has adopted will produce the same result without the danger.

As far as lands are concerned it seems to me we have entirely overlooked some very important legal considerations. There is a servitude upon railroad lands and upon railroad property, not brought on by reason of the relationship of agency, but there is a servitude existing that absolutely prevents the same canons of valuation applying as apply in competitive industry. I will illustrate thus. You give to the railroad and the other utilities alike the power of eminent domain. They come along to me—I have a piece of land that I want to keep. I want to get the un-

earned increment in that land. The railroad wants it and because it performs a public function it has a right to take it away from me against my will. On what theory and on what terms? One alone: That it will devote it to one specific use. Isn't that true? Not to warehouses, not to residences; not to anything but railroad business. Isn't that true? If I have a piece of land here, and Professor Gray has another piece alongside of it, absolutely the same kind of land, the same size, the same character of soil, and I can only use mine for one purpose and he can use his for all purposes, which one would you buy if you had your option? Now ponder that proposition. The fact that these agencies have to use their property for but one purpose puts what in law, as in fact, is a servitude upon those properties and prevents them from being of the same value as adjoining properties. You cannot say that because the adjoining properties are of a certain value for warehouse purposes the railroad property is of the same value for the same purpose, because it cannot be used for that purpose. In this you have to segregate carefully between operative and non-operative properties. As to non-operative property, oil lands, agricultural lands, timber lands and the like, there is no servitude, and the same rules with reference to value apply to those lands that apply to all other lands, but not so to railroad rights-of-way, and terminals and other operative property. This property is given to them as it were with a string to it, on the promise that they will only use it for railroad purposes. That is a sufficient servitude, at least, to make a difference in the value. In my opinion it takes away from them the right to the unearned increment, and it would be absolutely unjust to the former owner if that were not true, because you have no right to come along and take my land away from me, which I want to keep absolutely against my will, on the promise to devote it to one specific purpose and then get the beneficial results that would flow from using it for all purposes, forgetting the limitation. That point is worth considering. I made it three years ago. I believe it now as strongly as I did then. That is one of the reasons that I believe the land question is not being solved right and that it is not necessary to resort to your theories of agency and it is not necessary to resort to anything except commonly known and

accepted principles and economic laws, because that property can only be used for one purpose and it is not as valuable as similar property that can be used for all purposes.

The paper by Mr. Hayes presents that aspect of the case very clearly. But I have never been able to see why it is any more logical to take the case where the property has been condemned and a higher price paid as typical, rather than to take the piece of land that was not condemned but was given. How is it logical to find the highest that was paid for property and use that as typical? It seems to me it would be just as logical in taking one half the way down or taking the lowest price. To be consistent you would have to assume that all of the land had to be condemned and that you had to pay more than it was worth. I do not quarrel at all with the suggestion of Mr. Hayes that you pay or that you let the railroad have what it actually had to pay, at the time of the taking even though excessive. This does not have any bearing on the theory that I am advancing. If they paid a certain amount all right, but that does not mean that what was given to them should have the same rule applied to it. I want to suggest that on land values we do not as yet have to resort to the excellent scheme that Mr. Maltbie is going to present to you, I am sure, because we all understand it—it is very excellent—and we may have to resort to it finally. I think on legal principles you can make even a court understand that there is a servitude upon these lands that prevents these lands from taking the course in valuation—absolutely impossible for them to do it—that adjoining lands take. It is useless to say that the railroad land is of the same value as adjoining land which is used for warehouse purposes, when the railroad land never can be used for warehouse purposes. It is equally foolish to say that it is of the same value as adjoining land for farm purposes when the railroad right of way never can be used for farm purposes and was acquired on the promise, and on the promise alone, that it never would be used for those purposes. Anyone in analyzing that situation will have to conclude that there is at least a servitude on these lands sufficiently important in character as to have a material effect upon the value.

DISCUSSION OF PRINCIPLES TO BE APPLIED IN VALUING LAND

BY F. W. STEVENS

General Valuation Counsel, New York Central Lines; formerly Chairman, Public Service Commission, 2d District, New York

The thing which has attracted my attention, and my very serious attention, in this conference is the utter disregard that is paid by very many serious and thoughtful gentlemen to the law of the land. I say that in view of the fact that this conference was undoubtedly called in view of the pending valuation of railroad property, the greatest valuation that ever took place or probably ever will take

place and that as practical men we should devote ourselves to the serious consideration of that problem. Now the Act of Congress requires that the value of all lands owned or used by any railroad company for its purposes as a common carrier must be valued. There is no getting away from that proposition. And the Act of Congress also recognizes with perfect distinctness that there is a difference

between cost and value. That distinction has been in the Act from the very day of its enactment and has been so recognized by the Interstate Commerce Commission itself as well as by the world at large. In addition to that, the Supreme Court of the United States in unmistakable language and times, I might say, without number—although they can be counted up—has put upon the value of the property used the burden of being the basis for all rates. The Supreme Court of the United States laid that rule down in 1898, nearly eighteen years ago, and has consistently and uniformly repeated it in every decision which it has made since upon the subject, in precisely the language which it used in 1898. Now what did it mean? That is the first question.

I take it that in a republican government the only safety that we have for our public institutions is to observe and obey the law. If any man thinks the law is wrong, it is absolutely his right, if not his duty, to try to change it in the proper legal and constitutional manner. But I do insist that it is the duty of the Interstate Commerce Commission to obey the law as it stands, and we know that the final word as to the law of the land is in the United States Supreme Court. We cannot and we should not disregard it.

There is a great difference of opinion as to what the Supreme Court of the United States meant by the word "value." There is not the slightest ground for argument upon that question—not the slightest; and in order to reach that question I propose to call your attention to the circumstances that led up to the use of that language. It was not decided until about the year 1877 that legislatures or their creatures, commissions, had the power to regulate rates for public service corporations. That proposition was laid down first in the *Munn* case and five succeeding granger cases decided at the same time, and in deciding it the court used language that many interpreted to mean that the decision of the question of what the rate should be lay absolutely with the legislature. The matter ran along and kept coming before the court until finally about 1884—not to give you the names of all the cases—in an opinion by Chief Justice Waite, who wrote the opinion in the *Munn* case: he said, it must not be understood that there was no limitation upon this power of the legislature to prescribe rates, but that they must be subject to the constitutional provision that no person should be deprived of his property without just compensation or of the equal protection of the laws. The matter then ran along until the *Milwaukee* case in 1889, when the court finally and definitely decided that the legislature had no power to create a rate which was confiscatory in its character, which denied to the owner of that property just compensation for its use and which denied to him the equal protection of the laws. And from that day to this it has stood as the law of the land that the final word, not upon the reasonableness of the rate, but upon the question of whether the property of the carrier was confiscated, lay with the courts and not with the legislatures or Congress. Immediately after that there commenced to come before the Supreme Court cases in which, according to the judgment of the court, there had been gross confiscation of

the property of the carriers or attempted gross confiscation, by the legislatures of several states. It is not my language that it was confiscation; it is the language of the Supreme Court. There were no less than five such cases between 1893 and 1897, when the *Smythe* case came before the United States Supreme Court in which the court set aside the rates established by the legislatures of the several states upon the ground that they were confiscatory, so that the court was fully familiar with the questions in this class of cases. It had had its attention repeatedly called to every question of what constituted confiscation. But up to the time of *Smythe v. Ames* they never had laid down any rule whatsoever by which it was to be determined. The cases did not call for it. The case of *Smythe v. Ames* did call for the laying down of a rule. They appreciated it and fully understood it. They reviewed—Justice Harlan in his opinion—reviewed the principal cases which the court had decided in the then past four or five years and pointed out that there must be a substantial rule by which it could be determined whether or not property was confiscated. At that time it repudiated the idea that it had any power to fix rates or make rates, and it has repudiated that power in practically every expression it has since made. It has said time and time again that its power was simply to prevent confiscation, the taking away of property without just compensation, so that they were attempting to lay down a rule to prevent confiscation. And the word which they used was "value." It has been read here so many times that it is entirely unnecessary for me to repeat it. What did they mean by it?

Up to that time there never had been a suggestion that I have seen or heard of as to what the word "value" meant when expressed in terms of money, except the one thing, the power to command other commodities or other property, what is usually termed exchange value. The Supreme Court in half a dozen cases, the very members of the court who sat in *Smythe v. Ames*, had in the strongest language proclaimed that. It was the definition of every economist who had written upon the subject, and every standard work upon economic matters that had been published up to that time said it. Many courts in the United States had said it and it had been defined repeatedly. Many courts in the United States had declared that value meant that when applied to economic questions. There was absolutely no question about it, as to the meaning at that time, and the strongest definition, the strongest language regarding that came from the Supreme Court itself. So that we know what the men before *Smythe vs. Ames* used the word for; we know what the Supreme Court, the precise individuals,—not what the mythical entity the court had spoken forty or fifty years before,—but the precise individuals who constituted the court had declared it meant. That is what it meant. It declared that the basis was the fair value. What did the word "fair" mean? Somebody thinks it means something different from exchange value. What is it?

I want to read to you from some of the expressions of the court. I will call your attention to the language of Mr. Justice Brewer, who was one of the judges of the court

who decided *Smythe vs. Ames* and whose decision in the Circuit Court was affirmed. In the Circuit Court Mr. Brewer said: "What is the test by which reasonableness of rates is determined? It is not yet fully settled." "Now if the public was seeking to take title to the railroad by condemnation, the present value of the property and not the cost is that which it would have to pay. In like manner it may be argued that when the legislature assumes the right to reduce, the rates so reduced cannot be adjudged unreasonable if under them there is earned by the railroad company a fair interest on the actual value of the property." I am reading this to show you what Justice Brewer, who helped decide *Smythe vs. Ames*, thought about value. He said further:

"Property invested in railroads is as much protected from public appropriation as any other. If taken for public uses its value must be paid for. Constitutional guaranties, to this extent, are explicit, and in such condemnation proceedings no inquiry is permitted as to how the owners have acquired the property, provided only it be legally held by them. If a farm belongs to an individual, and the public seeks to take it, it must pay its value, and is not permitted to diminish the price by proving that the owner acquired the means to purchase it by immoral or disreputable practices. He may have made a fortune dealing in slaves, as a lobbyist or in any other way obnoxious to the public, but if he has acquired the legal title to the property, he is protected in its possession and cannot be disturbed until the receipt of its actual cash value. The same rule controls if railroad property is sought to be appropriated. No inquiry is permitted as to whether the owner has received gifts from the state or individuals or whether it has, as owner, managed the property well or ill so as to acquire a large fortune therefrom. It is enough that he owns the property, has the legal title, and so owning, he must be paid the actual value of the property. If he has done any wrong at any time in acquiring or using the property, that wrong must be redressed in a direct action therefor and cannot be made a factor in condemnation proceedings. These propositions in respect to condemnation proceedings are so well settled that no one ever questions them.

"The same general ideas must enter into and control legislation of the kind before us. The value of property cannot be destroyed by the legislature depriving the owner of adequate compensation."

I think I may say, without fear of contradiction successful or otherwise, that up to this point no one will dispute my contention. If I am right in it, the Supreme Court must have changed the meaning of the word "value" since the case of *Smythe vs. Ames*. That raises the question whether it has changed the meaning of the word, and whether it has, as a part of its judicial function, the power to change the meaning of a well-settled term in the English language; and it also raises the question whether it attempts to do so. I say it has not; and in order to prove my contention on that point I am going to read you what the court has said. There have been some nine cases since the decision of *Smythe vs. Ames* in which the court has reaffirmed that rule. In the first one, in response to the contention of counsel they say: "The basis of the calculation suggested by the appellant is, however, defective in not requiring the real value of the property and the fair value in themselves of the services

rendered to be taken into consideration. What the company is entitled to demand in order that it may have just compensation is a fair return upon the reasonable value of the property at the time it is being used for the public."

I want to call your attention to the fact that when you stand upon the investment, that is, the cash paid out for the property, you do not stand upon the property at all. You do not take it into consideration. The property that is invested in a railroad, the money, was destroyed. It was fluid, floating, personal property; it was converted into real property. It was destroyed entirely in the process of creating something else, and the contention is that you are not to respect the value of the property which has been created, but the property which created it—a very vast distinction, as you will see directly.

The next case is in 1903, in which the court expressly decided that the price of the property involved concerning which the rates were to be fixed, which it brought into public sale, determined its value—not what it cost to construct it, but what it sold for at public sale. The court answered the contention that such price was not the fair value of the property by saying,

"The officers of the two companies at the time thought that they got more than they could have got in any other way. But at all events, it is decided that the price is evidence—we might say more important evidence—than the original cost. If the supervisors were convinced by it, we could not say as a matter of law that they were wrong."

There they decided that price was evidence of value. But what further did they say? I quote this simply to see whether the court has changed its idea of value.

"Of course it is hard to answer the proposition, that value expressed in money depends upon what people think at the time. That determines what they will give for the thing, and whether they think right or wrong, if they or some one will give a certain price for it, that is its value then."

That was said in 1903.

The next case, in 1912, was a case where the court said that "if the property had increased in value since it was acquired, the company was entitled to the benefit of such increase." The cost had not increased. Such is the general rule.

MR. ESHLEMAN: That the court left open for decision, but it should be presented in proper cases.

MR. STEVENS: I know very well what you have in mind. The court has spoken several times since, and the last utterance is the most decisive of all. Then we come down to 1913. The court said on this subject—I am simply showing what they now understand value to mean, because it has been charged that the court is shifting its ground and it was represented to the committee of the Senate in Congress that it was shifting around, stepping out in the dark, to find out something about values. But the court said in 1913—speaking of a rate case in a railroad matter—"It is clear that in ascertaining present value we are not limited to the consideration of the amount of the actual investment. As the company may not be protected in its actual investment if the value of its property be

plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership, and it is that property and not the original cost of it, of which the owner may not be deprived without due process of law." Has the Supreme Court shifted?

The next case was a California case—I presume my friend Eshleman is entirely familiar with it—*San Joaquin Co. vs. Stanislaus County*. Now we are getting down to rock bottom. A certain school of thinkers say first that a railroad company is not entitled to have considered in its valuation of property, in making rates, property which has been donated to it, because there was no cost; second, that it is not entitled to have considered that property which it paid for out of earnings or from surplus, because that indicated the fact that it treated the public unjustly, and that such earnings were in excess of reasonable returns and therefore should not be counted the second time against the public; and third, that it is not entitled to any return upon the special franchise which it owns, all because it did not pay for it. That is the contention.

That question came up precisely in the last case before the United States Supreme Court (233 U. S.), and in that case a case of fixing rates—the company claimed that there should be valued in its property for rate making purposes certain water rights. They were not riparian proprietors, but they were taking water from a public stream, a stream which was declared by the constitution of California to be a public use. The master in chancery held that the value of those water rights was a million dollars; but he held that the company was not entitled to have them considered in making rates, because they were not the owners of them, principally because they had not paid anything for them. The company contended it had paid something for them. Circuit Judge Morrow, in the Circuit Court, stood with the master and held practically that they were not the owners of those water rights. Upon that question alone the case went to the Supreme Court of the United States. The court stated the issue before it to be a very narrow one. I will use the language:

"The bill concerns rates fixed in 1907 and the question before the court has been narrowed to the single issue: If the plaintiff is entitled to six per cent upon its tangible property alone, it is agreed that the orders must stand, but if the plaintiff has water rights that are to be taken into account, the rates fixed will fall short of giving it what it is entitled to . . . and must be set aside."

There is a straight question as to whether original cost was to be the basis of value. The court disposed of the question in two sentences:

"It is not disputed that plaintiff has a right, as against riparian proprietors, to withdraw the water that it distributes through its canals. Whether the right was paid for as plaintiff says, or not, it has been confirmed by prescription and is now beyond attack."

Now, gentlemen are claiming that value means something besides that. If so, it has got a definition since 1898. There is some authority for changing the meaning of words. I

know of but one and that has not been cited. I am going to cite it. There is a very interesting book called "Alice Through the Looking Glass." In a celebrated conversation between Humpty-Dumpty and Alice, Humpty-Dumpty said, "When I use a word it means precisely what I choose it to mean, neither more nor less." Alice said, "But the question is, can you make a word mean so many different things?" "The question," said Humpty-Dumpty, "is who is to be master; that is all." Upon ethical grounds I object to the cost theory. I agree fully with what the late Secretary of State said,

"I do not believe that railroads or other public utilities are entitled to any special consideration. They are entitled to be treated just as other people are treated."

In the case of *Smythe vs. Ames*, this was called by him to the attention of the court:

"If for instance railroad owners are demanding return upon capital never actually invested in the construction of the road or upon the original cost when the property has decreased in value, they not only have unfair advantage over those who are subject to competition, but may actually profit by conditions which are disastrous to others."

Other people, when they take their money and invest it in property, take chances up or down, and the difficulty with the theory is that you make the railroads take the chances. There is a railroad in western New York, built in good faith, by men of high business judgment and experience, which cost in cash between four and five million dollars. They are entitled to a fair return on the cost of that road, and yet that road was sold the other day for \$300,000. Under date of November 1 last, the Buffalo Wrecking Company bid in the track and equipment for \$220,000. Why didn't the debtor, upon the debtor and creditor theory, come forward and ask these men to put up another four or five million dollars to keep that road running? Somebody says roads must be run perpetually. Why don't they run the Buffalo and Susquehanna perpetually? It would not pay the operating expenses. Are the owners obliged to put up cash for all eternity for that? I think not. It is unfair, the investment theory you talk about for this reason: That if the man makes a good bargain and manages his road cheaply by extraordinary efforts, he gets no benefit from it, but the public gets the benefit, under the theory of actual investment, while on the other hand, although he may use the best judgment and do the best that he can, if competition or something else comes in and the thing is not a success, he has got to lose. Heads I win, tails you lose. The public gets the benefit of all your good things and bears the burden of none of the poor things.

But there is a far deeper side to the question than that. When the Interstate Commerce Commission comes to a piece of land that has been bought by a railroad company out of earnings, and the railroad company is receiving a dividend, what is the Interstate Commerce Commission going to do about it? Is it going to value it or not? Is it going to find out the present value as the law says? If it does not, it is violating the law. If it does, what is it going

to do with it? Is it going to allow anything for it in rate making? You say it is inequitable and unjust that they should have any return upon it, because it was not rightly acquired. The ethics of that comes down to this: In 1850, perhaps the railroad company exacted an unreasonable rate from A, B, C and D and acquired that property wrongfully. In 1915 X, Y and Z come in and say, "You acquired that property wrongfully." What shall we do with it? Restore it to the people whose money you took? No, give a portion of it to us who did not pay anything for it." Is that justice? I say it is not.

A man deeds a piece of right of way to the railroad company to build a road. To whom does he give it? Does he give it to the railroad company or to the public? If he wanted to deed it to the public he could do so. He gives it to the railroad company, gives the railroad the title in fee. If a man gives me a watch, haven't I a right to use it, to sell it? Are you going to come in and say that you should have the use of my watch? The trouble is, when you open that

door you are opening a door that you do not dream of. There are a very large number of people in this country today who believe that you can go back and inquire the way a man acquired a property and if he did not acquire it according to their notion of justice and equity, they would take it away from him and take it to themselves. I believe that question is a moral issue today. You come down against the common people, as I have, and you will find that many of them believe that Rockefeller acquired his billion or half billion dollars by improper methods, and think it ought to be taken away from him. That is what you are proposing to do in regard to land bought from earnings. As a social proposition can you stand for that? Is it going to be possible to go back fifty years, one hundred years and inquire how people got title to property? The ground that we stand on William Penn acquired by purchase from the Indians. How did the Indians get the title to the land? They got it with the spear and arrow, I take it. How are you going to do it?

THE PROPER TREATMENT OF APPRECIATION OF LAND

BY MILO R. MALTBIE, PH.D.

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If I understand Mr. Stevens correctly, if he is right about this question of fair value, if it means commercial value, and if I am running a railroad, and the public authorities—the legislatures, courts and commissions—will keep their hands off for a minute or until I fix rates and get earnings established for one year, thus fixing market value, they can then do anything they please under Mr. Stevens' theory. I will not care, because having established market value by earnings, a public body cannot interfere with market value as it is safeguarded under the Constitution. They cannot touch the rates, because they cannot touch earnings.

I was asked to speak on my theory of the proper treatment of appreciation of land. I shall assume for the purposes of these few comments, that the theory that land is to be valued according to the present value of contiguous property is sound. Understand, I said I shall assume that; I did not say I believed it just. It means, of course, that, as the land increases in value, or rather as adjacent land increases in value, the land belonging to public utilities increases in value, that it is to be distinguished from other property which decreases in value from year to year and that such land has an annual increment or an average annual increment in value from year to year.

TREATMENT OF INCOME PROPERTY

I want to call your attention to one other major premise. The argument usually runs something like this:—As in fixing fair value one takes the present value of physical property other than land, so one must take the present value of land. Hence as physical property decreases in value, becomes less valuable as time passes, they are treated equally. As Judge

Hough says, it is treating the plus and minus quantities alike. That is the argument for taking land at its appreciated value when you take other physical property at its depreciated value.

What is the next step in the treatment of physical property? It is said that inasmuch as physical property other than land becomes less valuable as time passes and must ultimately be replaced either by property of the same kind or of similar kind, there must be an allowance made in operating expenses or added to operating expenses to take care of that depreciation from year to year. I will use a simple illustration and eliminate complications. If you have a car worth \$5,000, which is to last twenty-five years, it decreases in value from year to year, and you must ultimately replace it. You must allow about \$200 (that is, \$5,000 divided by the time) in expenses or added to operating expenses each year in order to replace the car at the end of the time. I call you attention to the fact that those who believe in that theory do not say that you must necessarily spend \$200 a year as you go along, but that you must accumulate a fund which will provide for the replacement of the car when it ultimately ceases to be used. The money is not actually spent, but it is treated as an operating expense; it goes on that side of the account just as if it were for coal or labor and actually paid out. Such is the treatment of depreciation that is supported even by those who do not agree that in determining the fair value of the property one should take the depreciated value of the property.

Let us pass from that kind of property to land. Now we are on the other side of the ledger, and we have something which instead of decreasing in value increases in value from

year to year; that annual increment, if it is to be treated precisely as you treat depreciation on the operating expense side of the question, must be treated as an income or put on the income side of the account.

IS APPRECIATION REAL

What are some of the objections to this theory? In the first place, it is objected that the annual appreciation is not an income, that one is putting down a suppositious income, not a real income. Is a depreciation allowance that is accumulated against some future day an actual outlay? Hence to say that appreciation is not a real income is no more of an objection than to say that depreciation is not a real expense. One is just as real as the other.

But let us see whether or not the appreciation of property is not, after all, equal to a real income. Suppose you have land costing \$100,000, and your rates are fixed on that basis at the time you buy the land. In ten years we will say it has increased to \$200,000 in value. If the theory is correct that the public must allow a return on the present value of the land, you are entitled after ten years to charge enough to secure a fair return on \$200,000. If you get an income on \$200,000 when you have an investment of only \$100,000, what do you want better than an income of that sort? I do not know how you feel about it, but I would be satisfied. If I could invest \$100,000 in a piece of land, have an income on that \$100,000 every year and as it increased in value from year to year get an income in addition on an annual increase of \$10,000 (the first year \$100,000; the second \$110,000, the next year \$120,000, and so on up to \$200,000), I would laugh at anyone who said I was not getting an equivalent to an income of \$10,000 yearly on and above my original investment.

Suppose you went to New York and talked with families that have owned land on Manhattan Island almost from the time the original settlers got it from the Indians, and suppose you said to them, neither you nor your ancestors ever got any income except a return upon the original cost upon the basis of \$24 for the Island of Manhattan, they would probably tap their heads and say, "Nobody at home"; and they probably would add as Al Jolson says, "Not only is there nobody at home, but nobody has ever resided there."

Some of you probably have to make out an income tax return. Try that theory on the Treasury Department

next spring and see what the Treasury Department will say about it. Say, "Yes, my land increased \$10,000 in value this year, but it is not income; it is a fictitious thing to me." You will find the jail into which you go is not fictitious.

CAN APPRECIATION BE DETERMINED

The second objection is that increase in land values is not definite, it is uncertain, it is intangible. But what is done in the case of depreciation? An engineer comes along and says this property is going to last so long and so much should be set aside for depreciation. Probably that is the best that can be done at present, but it is less certain than appreciation; because the moment one says that that certain land is today worth \$200,000 and cost \$100,000 ten years ago, or its value was \$100,000 ten years ago, you know what the appreciation was during that period.

The further objection that I have heard is, "Well, that must be part of the single tax theory." There are three things in this world that you do if you want to eliminate your antagonist. In the first place, you may say he is a Socialist. That just about disposes of him. He is then beyond the pale of all reason, no matter what he is saying. If you cannot do that, you call him "an impractical man," and say, "We must deal with things practically." Of course, that is a knockout blow. But if he still survives, call him a single taxer, and say it with bated breath, for such should hardly be found in decent society.

But it is not a question of whether it is socialism or single tax. Is it common sense? If you hold to the theory, which I believe to be sound, that depreciation must be taken account of in operating expenses or added to operating expenses, you must admit that appreciation in land values from year to year must go down on the income side as an offset. Take land and buildings. Land appreciates and buildings depreciate. If you do not believe in the theory, you say depreciation on the buildings must be put into operating expenses, but you will not allow appreciation on the land to be put on the income side. What does everybody do? Everyone figures that if the land goes up in value as much as the buildings go down, he has just as good a property at the end of the year as he had at the beginning. Why is it not logical to offset in public utilities appreciation of land against depreciation of the buildings? If it is logical as applied to land and buildings, it is logical as applied to other property.

OPEN DISCUSSION

MR. JAMES C. BONBRIGHT, *Graduate Student, Columbia University*:

It has been a matter of considerable interest to those of us who have been studying the recent commission decisions to note an apparent discrepancy between certain opinions written by Mr. Stevens as Public Service Commissioner of New York, 2d District, and his more recent theories in regard to valuation. It is, perhaps, not a reasonable charge to make against him that he has been inconsistent, for he

certainly has the right to change his mind. However, in view of a recent statement by him that this discrepancy is apparent rather than real, I should like to read some of Mr. Stevens' own remarks as chairman of the Commission in the well-known case of *Fuhrmann vs. Cataract Power & Conduit Co.*, decided April 2, 1913:—

"In a rate case, the exchange value cannot logically be a basis for inquiry, for the reason that the exchange value depends on the net income, present and prospective."

"There would seem to be no escape from the conclusion that when courts have used the term 'fair value' in rate cases, they had something in mind different from 'exchange value,' or in other words, 'value.' It is not to be supposed that they did not comprehend that value depends upon the rate."

And again, after citing the famous *Smythe vs. Ames* decision, Mr. Stevens says:—

"This enumeration of matters to be considered may be regarded as a demonstration that the court did not have in mind 'value' in its economic sense of 'exchange value.'"

In view of these utterances, I think that it would be highly illuminating if Mr. Stevens would tell us how he reconciles all this with what he has said to night.

MR. STEVENS:

I undertook the examination of this question a good many years ago, as early as 1910. I reduced my views to writing. They were afterward published in an opinion in the Second District Commission of the State of New York, and I am not aware that I have changed my views in the slightest since 1910. If I have, I do not know it. If you will refer to that case, the West Chester Street Railway Company, I said, "An inquiry into the value of railroad property as a whole is an investigation of the question how much will any person or collection of persons desiring to possess a property, how much of money or other things will they be willing to part with for the sake of such possession." That was an official utterance.

MR. BONBRIGHT:

Was that a rate case?

MR. STEVENS:

No, sir. After pointing out that railroad property is not generally subject to purchase or sale as a whole, I say: "In short, no direct evidence is obtainable concerning its proper ratio of exchange. The only course open to the investigator is to select its qualities or attributes which in his judgment would create a desire for the property and then estimate how much that desire would induce a prospective purchaser to surrender for his satisfaction." I again say, without pressing the matter unduly, "We may say that value is nothing intrinsic in things, but simply the temporary measure of the general average of the desire for them at the moment. It is subjective, inherent in the mind which conceives it and not in the object in which it is conceived, the qualities of an object which make it an object of desirability to those who have it not and who cannot acquire it without something in exchange for it." That is what I understood by value. Again, I call attention to the case of the Buffalo and Susquehanna Railroad, which has been spoken of tonight. I say: "The difference between financial success and financial failure lies in density of traffic. The value of an existing road depends directly upon such density of traffic and not on the cost of the road. If cost were a factor which determined the ratio of exchange, it is probable there would be but little difference between the value of the two roads mile for mile."

In the case the gentleman has very correctly cited I may admit the language is somewhat, on the face of it, inconsistent with that, if you take that by itself, but I think if he will read the whole opinion through, he will see no inconsistency. I was troubled at the time of writing the last decision with the apparent reasoning in a circle that Mr. Maltbie has alluded to. I did not at that time see my way clearly how to get rid of it. Afterward I undertook an exhaustive examination of what the Supreme Court of the United States has said, and the reason for it, the occasion for it, and I could see no possible escape from the proposition which I have attempted to enunciate here tonight; and what I have been arguing for tonight has been for what the law is that we have got to observe. The law is that if you take the physical property of the railroad away from it by condemnation proceedings, you have to pay the present value of it. There is no doubt about that. Mr. Eshleman said last night with great correctness, that there was absolutely no difference between taking the property itself and taking the use of it away from a man, yet you have the value in one case meaning one thing and in another case meaning another thing. I am not aware that I have changed my opinions in the expression which the gentleman has read. Taken by itself it is somewhat inconsistent. I know that; but if you read the whole opinion it stands squarely with the other things I have said. I was trying to get away from that proposition and the fact that the market value, the value depends on the rate in certain cases.

MR. HARRY BARKER, *Editor, The Engineering News*:

Mr. Maltbie, I think, ought to illuminate us more on some phases of his theory, which I seem to recognize as the same theory which was not accepted by the highest courts in the state of New York in some of his cases as commissioner.

Mr. Maltbie apparently admits the increment of land in order to offset depreciation; but is it not purely incidental that such a result may be secured. In general it seems to be regarded as equitable to deny an owner of property an unearned increment of value only when he is protected against risk of a corresponding possible decrement. *Vice versa*, perhaps it can be considered equitable to admit the increment only when there is no protection against the decrement. But each pair of increment-decrement twins then goes together—i.e., increment of land and depreciation of operating plant cannot logically be paired off. If they do tend to offset is it not accidental?

Consider depreciation: Loss of plant value is certain; increase is doubtful. A certain deterioration is inevitable since it is the irreparable attrition from service. Obsolescence and inadequacy are commonly lumped in also under depreciation and one might expect that here rise or fall of value might be problematical. Yet even these in the utility's experiences are found to be in one direction only—one has only to think of telephone equipment, street-lighting apparatus, steam engines, trolley cars, gas retorts, reciprocating pumping engines, etc., to see the process. The company, under the Knoxville decisions of the United States Supreme Court, if

diligent, is protected against loss of investment from depreciation; should it therefore reap all the advantage of remotely-probable increased value in plant? Here, if anywhere, one might expect that Mr. Maltbie's plan might be applied so that any possible increment in some year would enter the earnings and decrease the compensation for depreciation.

Mr. Maltbie's experience seems to have been with land that always goes up in value. Some people have land that has gone down—in spite of general nation-wide increases. If an elevated railway be built past city business property or a railway cuts through a quiet residential section, then contiguous lands drop very much in value. The value of utility land, which follows adjacent tracts according to the Minnesota rate cases of the Supreme Court, ought to go down too. Whether the possible recovery and increment are to be admitted ought to depend on the prior protection against possible decrements. If Mr. Maltbie's plan would offset land decrements against land increments and enter the balance in expenses or income as the case may be, then, I think, a more ready ear would be lent by courts or commissions.

In any event he would strengthen his case if he emphasized his aim as a preserving of the equities in full measure—rather than the diminution of plant-depreciation allowances and the reduction of rates.

DR. EDWARD W. BEMIS, *Member of the Advisory Board to the Division of Valuation of the Interstate Commerce Commission:*

With respect to Mr. Stevens' statement tonight that value generally understood is power in exchange, and that that is the view of economists generally, I would agree most heartily; but this brings up the question whether the courts of the country have in view that idea when they speak of fair value. Take the Consolidated Gas Company of New York or some other municipal utility, whose rates have been reduced and whose reduction has been permitted, by our courts. I cannot conceive that the power in exchange or the value of those companies was as great immediately after the reduction of rates as before. I cannot conceive that the value or power in exchange was not reduced by the reduction of the rate. Not in all cases to be sure. There are cases where there has been reduction and where the company really does not suffer at all because of increase of business and the suffering from a reduction is minimized in a great many companies by a tendency in that direction. But I think it must be obvious to students of public utilities that there have been many reductions endorsed by the courts which obviously reduce the net earnings and the value of those utilities, but yet the fair value has not been affected in the opinion of the court; that is, they have considered that it was a legitimate action of the local legislative power. It is said, I am aware, that you cannot determine the value of a utility, and therefore the courts may have dismissed the idea of value directly, because they could not determine it, and yet there are utilities whose stocks and bonds are most widely quoted on the stock exchange. The Consolidated Gas of New York is a good illustration. While we may criticise Wall Street, I believe that on the whole

the stock and bond market in Wall Street is one of the most competitive markets in the world, and that value is reflected in the case of securities widely bought and sold like Pennsylvania Railroad, New York Central or Consolidated Gas in New York. That market does reflect pretty well the power in exchange or the value of the entity, the corporation, whose stocks are then bought and sold. I believe that it can be proven that these securities have fallen as a result of this rate reduction in many cases; yet if I understood Mr. Stevens, his theory would lead us to believe that such price reductions would not be allowed by the court, because value with him and fair value are the same thing. You can reduce the value, I believe, and leave a fair amount of property and fair return on that fair amount of property, to use Mr. Stevens' own term in the Buffalo cases. This would be impossible, however, if value be fair value. I hope when the times comes Mr. Stevens will enlighten us as to how he reconciles court decisions permitting reductions in rates which reduce value with his claim tonight that value and fair value are the same—for if they are, then rates cannot be reduced if the reduction lessens value as is usually the case.

MR. MALTBIE:

May I answer a question asked a moment ago by Mr. Barker? I want to express my thanks to him for calling attention to land which depreciates in value. When a man has a coal mine and he says, "This mine is going to run out in twenty years," what does he do? He charges up an annual sum to provide for writing that coal mine out of capital account in that time. That is what ought to be done. If there is any land that depreciates in value that belongs to a public utility, there ought to be a provision made on the depreciation side of the accounts for the depreciation of the land. I thought every one would take that for granted. That is one of the strongest arguments in favor of my theory, for when you have land which appreciates in value, you should put it on the other side of the account. The gentleman referred to a decision of the highest court in the State of New York refusing to accept this theory in one of the cases where I wrote the opinion. He is entirely right about it. The court did refuse to accept it, but gave no adequate reasons why it was revoked. If you put depreciation on one side, there must be appreciation on the other.

MR. A. M. SAKOLSKI, *Secretary, Valuation Committee, The Delaware and Hudson Company, Albany, N. Y.:*

How should profits arising from appreciation in the value of land be determined? Shall we permit a man to go to a banker with a balance sheet and say, "I have this much additional value in my business because my land has appreciated and therefore my business is profitable?" How are we to determine there is really a profit? Shall we permit a large corporation to publish an income statement showing that its land during the year has appreciated half a million dollars though no actual cash profits were made? How are you going to pay that out in dividends? The objection to Mr. Maltbie's theory is that it is contrary to correct accounting principles; and the determination of profits is a matter

of accounting. It is not a correct accounting principle to write up any profit or income unless it is realized in the form of cash or its equivalent. For that reason Mr. Maltbie's theory will not hold in business practice. Appreciation is undoubtedly an asset but it cannot be termed a profit unless it enters the income account as the result of an actual tangible transaction. *Increased value* and *increased profits* are not identical conceptions.

MR. JOHN BAUER, *Assistant Professor of Economics, Cornell University*:

Suppose that the value has been realized and put back into the land or other form of fixed capital, when the time for dividend comes could you not declare a dividend upon the amount?

MR. MALTBIIE:

Is it expected that I shall answer that?

THE CHAIRMAN:

We are getting away from the subject. However, go ahead.

MR. MALTBIIE:

I refer the gentleman to the decision of the Court of Appeals in the case Mr. Barker referred to, the Court of Appeals of the State of New York in the King's County Lighting Case. There you will find that the court makes the point that it is not a question of putting all of the elements on your books that are considered in rate cases.

It is a question of the construction of an account on one side representing expenses and putting a statement of your income on the other side. When you construct your accounts what should you put in? You should put in a return upon the value of your property. When Mr. Stevens comes along and says that in a rate case we should take not the cost but the present value, it is not fair to say that he must reconstruct his books. He has to do nothing of the sort. His accounts ought to be based on cost. But when he claims a return on present value, it is the appreciated value of the land that you put into a temporary account in order to determine the fair return. This does not mean the reconstruction of the books, and it does not mean a reconstruction of the income account, when you take into account appreciation; but it does mean the construction of an income account for the purposes of that case.

MR. SAKOLSKI:

You limit your theory to cases of valuation only?

MR. MALTBIIE:

Limit it to rate cases. You also want to know how to determine appreciation. You have determined it when you fix the fair value of the land. When you say the land cost \$100,000 and its present value is \$200,000 and you must determine that according to the theory that the present value of property should be taken, you arrive at the appreciation, and you can work it out without logarithmic tables.

DEPRECIATION DEFINED¹

BY FREDERIC P. STEARNS

Consulting Engineer, Boston, Mass.

The subject for this morning's session is "Depreciation." Probably there is no other subject about which there is so much controversy, and about which there is such diversity of opinion. In many cases, however, the diversity is not so much a difference of opinion as it is a question of misunderstanding, owing to the many senses in which the word is used by different people. If a person speaking on the subject has in mind one definition of depreciation, and a person listening another, it is obvious that the views of the speaker may not be readily accepted.

The primary definition of depreciation which is quite generally accepted is "the lessening of value or worth," and, as used in connection with the valuation of utilities, it is generally considered to be the lessening of value or worth due to age and use.

Some people hold the view that as long as a plant is in good operating condition and giving substantially as good service as a new plant there is no depreciation, or at least no account-

able depreciation. In other words, they make the character of the service the measure of depreciation, rather than the loss of value or worth of the primary definition.

Under recognized systems of accounting certain sums are set aside as a reserve for depreciation. The amounts vary for different kinds of property, and for much short-lived property no money is set aside, the depreciation being taken care of at the time the property is replaced or retired for other reasons. The sums so set aside may be more or less than the real lessening of value or worth of the property, and yet they represent the depreciation as determined by accounting methods.

It is very generally agreed that there should be included in the earnings of a public service company a sufficient sum to compensate for the loss of value which is taking place as property units grow older, but there are many different methods of estimating this sum at different ages of the unit which give varying results. These various methods may all give equitable results in the long run if applied consistently from the beginning to the end of the life of the units, and

¹ Opening remarks at the Friday morning session of the Valuation Conference as presiding officer.

it would be entirely equitable under such circumstances to assume the depreciation of the unit to be equal to the amount received as compensation for depreciation, even though its real depreciation is necessarily independent of the method of accounting.

Under every method of compensating for depreciation the aim is that there shall be included in the earnings the whole value of any property unit by the time it ceases to exist, omitting from consideration in this discussion cases where the unit at the end of its life has a scrap value.

Some methods provide directly for annual instalments which aggregate 100 per cent of the value of the unit during its life, but there is one method in very general use, namely, the sinking fund annuity method, by which the sum of the annual payments does not aggregate 100 per cent but a much smaller sum, and in order to provide the 100 per cent required by any equitable system, it is necessary that the annuities of the sinking fund be invested where they will earn interest, and such interest must be added to the annuities in order to reach the 100 per cent.

I am not proposing to discuss the relative merits of different methods of providing for depreciation, but will make the statement that any careful mathematical analysis will show that where the sinking fund annuity is assumed to be the proper annual compensation for the depreciation of the property units of a public utility, it will be inequitable to deduct depreciation from a value based on actual or reproduction cost in order to obtain the so-called "fair value" upon which a fair return should be made.

In this case the base on which a fair return should be estimated must be the value without deduction for depreciation, even though it differs from what may be called the "value" of the property. The use of a rate base which is different from the "value" is merely a means of compensating for the failure of the sinking fund annuities to add to a total of 100 per cent during the lifetime of a property unit.

There are many who, from a consideration of the sinking fund annuity method of providing for depreciation, have

proved to their own satisfaction and could prove to others that it is inequitable in such cases to deduct depreciation in obtaining a rate base, but they sometimes apply the same reasoning to other methods of compensating for depreciation where it is equitable to make deductions for depreciation. The failure to recognize that the method of determining compensation for depreciation affects the question of whether or not depreciation should be deducted from cost new has been a cause of much misunderstanding.

Practically all public utilities are continuing properties which never reach the end of their life, and it is possible to

adopt a sufficiently liberal policy of appropriating money from earnings for making replacements and improvements of the property to prevent loss of value in the property as a whole. Many people, having in view the property as a whole and knowing that it is maintained in excellent condition by liberal expenditures from earnings, properly believe that the value of the property as a whole has not depreciated below that represented by the invested capital.

Although the value of the whole property may be kept intact in this way, most units of property depreciate, as stated in the Knoxville decision, "from the moment of their

first use," and become less and less valuable until they finally go out of service and have no more than a second-hand or scrap value.

The depreciation of the unit is one that can be estimated with a moderate degree of accuracy, as the errors which occur in dealing with different units will to a large extent offset one another. Any attempt to tell how much money shall be spent from earnings to keep the investment in the whole property intact is likely to be wide of the mark. Without regard to the relative merits of these two conceptions of depreciation, it will readily be seen that they are a fruitful source of misunderstanding.

I presume the time will come when there will be a clearer understanding and a more nearly uniform practice in regard to depreciation than at present, and that the word "depreciation" will not be used in as many different senses as at present. These results will be achieved by discussions such as are being presented here.

PART V DEPRECIATION

DEPRECIATION DEFINED

KINDS OF DEPRECIATION

HOW DEPRECIATION IS DETERMINED

METHODS OF PROVIDING FOR DEPRECIATION

KINDS OF DEPRECIATION FUNDS

RELATION OF DEPRECIATION TO FAIR VALUE

RELATION OF DEPRECIATION TO RATE OF RETURN

COURT DECISIONS ON DEPRECIATION

BY JACOB H. GOETZ

Of Counsel, Public Service Commission First District, New York

DIVERSITY OF OPINION

DESPITE the attention which has been increasingly devoted to this problem in recent years, there still exists a contrariety of opinion concerning it, and from the state of difficulty and uncertainty we naturally turn to the courts for the finality to be expected in the authoritativeness of legal interpretation.

However, the quantity of legal literature extant on the subject is not fairly proportionate to the mass of judicial diffusion among the 8,700 volumes of American court decisions, the ignorance of which, we are warned, excuses no one. While the decisions already promulgated have helped in delimiting the excursions of legislators, regulators and judges in this field, nevertheless they have also contributed in no small degree to the contention and confusion which usually characterize a fresh attempt to deal with the question. An analysis and comparison of the court decisions on depreciation hardly disclose that passion for uniformity which a distinguished publicist recently declared,

"pervades all human nature, and has been one of the profoundest causes of the struggles which constitute so great a part of the story of the life of man on earth."¹

This may seem remarkable in view of the fact that valuation questions may come before the United States Supreme Court upon a review of constitutional issues, and, as decisions of that court are binding upon all,² uniformity ought to follow.

The reason for this diversity among the judges is not difficult to trace. It is a phase of modern treatment and growth. Even after it had become the practice of mercantile establishments to charge off a large percentage of their annual earnings to a depreciation fund, public service corporations were slow to recognize this necessity. The fact that a future depreciation account was a novelty in the accounting of these corporations is acknowledged as the reason why so scant attention was given by the courts to this subject in litigation.³

In earlier rate cases, counsel for the litigants did not perceive the far-reaching effects of the subject, and it was not sufficiently dwelt upon by the Federal and

other courts because the question was involved in suits in equity to restrain the enforcement of rates fixed by ordinance or statute which presented to the court the sole question whether the effect of such ordinance or statute was confiscatory and, hence, in violation of the statute, and the court, having determined for or against the constitutionality of the ordinance or statute under consideration, paid scant attention to matters of detail not necessarily involved in the precise question before it.⁴

Definite ideas concerning the subject were not reflected in the early decisions. Even cases which mentioned reproduction-cost less depreciation contained no discussion of the factor. A few cases which indirectly discussed the subject in its relation to the ascertainment of net earnings failed to disclose a lucid conception of what was meant by depreciation in any aspect. It was the increasing recurrence of regulatory exertions, especially in rate matters, that gave the effective impulse to the development of the depreciation factor into so broad and vital a question.

The differences in the theory and practice which arose even after the subject had received extensive consideration are due largely to the failure to distinguish between the classes of depreciation and the purposes to which depreciation may be applied. Text writers and courts have constantly quoted excerpts from cases involving the subject without regard to whether the particular case affected a valuation for a basis of rate-making, a calculation of earnings attributable to the return under a specific rate, a condemnation or purchase, a tax levy, an accounting or a capitalization. That there are underlying differences is obvious. It may well be that, if the relation of the problem to the several divisions were discussed and the questions were solved separately, and the true principles affecting each division were ascertained, without applying to one state of facts and theory precedents which have been applied to a dissimilar state of facts and theory, the views and expressions upon the subject could be co-ordinated and ultimately harmonized.

DEFINITION OF DEPRECIATION

The courts have invariably avoided all-inclusive definitions of legal terms, but there have been several definitive statements by the courts which should be referred to for a better understanding of this discussion.

⁴ *People ex rel. Kings Co. Ltg. Co. vs. Public Service Commission* (1913), 156, N. Y. App. Div. 603, 614-615.

¹ John Bassett Moore, "The Passion for Uniformity," 62 Pa. Law Rev., May, 1914. For illustration of the conflicting views, see *People ex rel. Bklyn. Hts. R.R. Co. vs. Tax Commrs.* (1910), 69 Misc. 646, 656, 659; *San Diego Water Co., vs. San Diego* (1897), 118 Cal. 556.

² *Pub. Serv. Gas. Co. vs. Board of Public Utility Corporations* (1903), 87 Atlantic, 651, 657.

³ *People ex rel. Brooklyn Hts. R. R. Co. vs. Tax Commissioners* (1910), 69 N. Y. Misc., 646, 657.

In the rate case of *Cumberland Tel. & Tel. Co. vs. City of Cumberland*,¹ the court accepted as "sufficiently accurate" the following definition furnished by one of the witnesses of a form of depreciation:

"Depreciation may be defined as the loss in value of some destructible property over and above current repairs."

It has also been described as the "constant deterioration of the plant which is not made good by ordinary repairs which, of course, operates continually to lessen the value of the tangible property which it affects."² Other cases define the measure of depreciation in describing it as due to age and use,³ to wear and tear, improvements in the art, municipal improvements,⁴ and to inadequacy and obsolescence.⁵ Depreciation is divided into two classes or species: Physical, due to ordinary wear and tear, and functional, due to necessary replacement of equipment before it is worn out.⁶ Depreciation is further divided into complete and incomplete depreciation. Complete depreciation represents that part of the original plant which through destruction or obsolescence has actually perished as useful property; incomplete depreciation represents the impairment in value of the parts of the plant which remain in existence and are continued in use.⁷

As Mr. Justice Hughes pointed out in the Minnesota Rate Cases,⁸

"It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts."

DEPRECIATION AS A FACTOR IN PHYSICAL VALUATIONS FOR BASIS OF RATE RETURN

The phase of depreciation about which there exist the greatest contention and difference of opinion is that affecting valuation as a basis of return.

No inflexible rule has been laid down by the legislatures or courts for the ascertainment of fair value for rate making purposes, but the reproduction-cost-less-depreciation method is the most frequently used.⁹ The adoption of this method resulted from the inquiry which the courts made, in cases attacking the validity of rates as invading property rights, as to the amount

of property involved, for rights in property which did not exist could not be impaired.

The celebrated case of *Smythe vs. Ames*¹⁰ may be said to have laid the basis of the depreciation factor in ascertaining reproduction value and in calculating operating charges to ascertain the amount of return.

The constitutional guarantees affecting rates extend to all elements of valuation.¹¹

The rate cases in which the factor of depreciation in a physical valuation was first considered were two cases in the Federal Court which involved a species of depreciation nearly akin to obsolescence.

Up to the time of the Knoxville decision in 1909, there were but few other court cases in which the relation of depreciation to physical valuation was *discussed*.¹² The City of Knoxville appealed from a decree of the United States Circuit Court permanently enjoining the enforcement of a city ordinance fixing maximum rates to be charged by the water company upon the ground of constitutional invalidity. No deduction was found to have been made for depreciation. The court, speaking by Moody, J., said:¹³

"The first fact essential to the conclusion of the Court below is the *valuation* of the property devoted to the public uses, upon which the company is entitled to earn a return. . . . The valuation was determined by the master by ascertaining what it would cost, at the date of the ordinance, to reproduce the existing plant as a new plant. The cost of reproduction is one way of ascertaining the present value of a plant like that of a water company, but the test would lead to obviously incorrect results, if the cost of reproduction is not diminished by the depreciation which has come from *age and use*. . . .

"The cost of reproduction is not always a fair measure of the *present value* of a plant which has been in use for many years. The items composing the plant depreciate in value from year to year in a varying degree. . . .

"It is not easy to fix at any given time the amount of depreciation of a plant whose component parts are of different ages with different expectations of life. But it is clear that some substantial allowance for depreciation ought to have been made in this case. The officers of the company, *alio*

¹⁰ (1896), 169 U. S. 466, 546-547.

¹¹ *Bonbright vs. Corp'n. Commrs. of Arizona* (1913), 210 Fed. 44, 48.

¹² *Capital City Gas Light Co. vs. Des Moines* (1896), 72 Fed. Rep. 829, 843; *Milwaukee El. Ry. & Lt. Co. vs. City of Milwaukee* (1898), 87 Fed. 577; *San Joaquin & K. R. C. & I. Co. vs. Stanislaus Co.* (1902), 113 Fed. 930; reversed in *Stanislaus Co. vs. San Joaquin & K. R. C. & I. Co.* (1904), 192 U. S. 201; *Columbus Railway & Light Co. vs. City of Columbus*, decided in 1906, No. 1206 in Eq., U. S. Circuit Ct., So. Dist. of Ohio, Rept. of Spl. Master T. P. Linn, confirmed by the Circuit Court without opinion; *Consolidated Gas Co. vs. City of N. Y.* (1907), U. S. C. C., So. Dist. N. Y. Rept. of Arthur A. Masten, Master; affd. (1907), 157 Fed. 849; revd. *Willcox vs. Consolidated Gas Co.* (1909), 212 U. S. 19; *San Joaquin & Kings R. C. & I. Co. vs. Stanislaus* (1908), 163 Fed. 567, 572 (1911), 191 Fed. 875, revd. (1914), 233 U. S. 454.

¹³ *City of Knoxville vs. Knoxville Water Co.* (1909), 212 U. S. 1, pp. 9, 10, 13.

¹ (1911), 187 Fed. 637, 653.

² *Peo. ex rel. Jamaica Water Supply Co. vs. Tax Commrs.* (1909), 196 N. Y. 39, 57.

³ *City of Knoxville vs. Knoxville Water Co.* (1909), 212 U. S. 1, 9.

⁴ *Cumberland Tel. & Tel. Co. vs. City of Louisville* (1911), 187 Fed. 637, 654.

⁵ *Pioneer Tel. & Tel. Co. vs. Westenhaver* (1911), 29 Okla. 429, 454.

⁶ *People ex rel. Brooklyn Hts. R. R. Co. vs. Tax Commissioners* (1910), 69 Misc. 646, 655; *People ex rel. Queens Co. Water Co. vs. Woodbury* (1910), 67 Misc. 490, 493, affd. 142 N. Y. App. Div. 943, 944, 143 N. Y. App. Div. 618, and 202 N. Y. 619.

⁷ *Knoxville vs. Knoxville Water Co.* (1909), 212 U. S. 1, 13.

⁸ (1912), 230 U. S. 352, 434.

⁹ *Pioneer T. & T. Co. vs. Westenhaver* (1911), 29 Okla. 429, 433-434.

intuitu, estimated what they called 'incomplete depreciation' of this plant, which we understand to be the depreciation of the surviving parts of it still in use, at \$77,000. . . . It is enough to say that there should have been a considerable diminution, sufficient to raise the net income found by the court above 6 per cent. upon the whole valuation thus diminished."

After discussing various other phases of the case, and considering depreciation in another sense, *i. e.*, in its relation to earnings, the court continues:

"The company's original case was based upon an elaborate analysis of the cost of construction. To arrive at the present value of the plant large deductions were made on account of the depreciation. This depreciation was divided into complete depreciation and incomplete depreciation. The complete depreciation represented that part of the original plant which through destruction or obsolescence had actually perished as useful property. The incomplete depreciation represented the impairment in value of the parts of the plant which remained in existence and were continued in use. It was urgently contended that in fixing upon the value of the plant upon which the company was entitled to earn a reasonable return the amounts of complete and incomplete depreciation should be added to the present value of the surviving parts. The court refused to approve this method, and we think properly refused. A water plant, with all its additions, begins to depreciate in value from the moment of its use."

The court in the following parts of the opinion in fact discussed depreciation in both its relation to valuation and its relation to earnings, as if the problem was governed by the same rules. The court held that the cost of reproduction should be diminished "by the depreciation which *has* come from *age and use*." This might be contended to mean only actual or complete depreciation. But the subsequent ruling that complete and incomplete depreciation should not be added to the present value of the surviving parts justifies the assumption that the court included in the term depreciation what is usually described as "accrued depreciation" or "theoretical depreciation." It seems, however, that the court did not include accrued functional depreciation as distinguished from accrued physical depreciation.

It should be kept in mind that this part of the discussion relates only to depreciation as a factor in the physical valuation.

Following the authority of the Knoxville Water Case, the courts, in later cases, gave full recognition to the deduction of depreciation from cost to reproduce in order to find a basis for testing the reasonableness of rates.¹ The principal cases upon the question of de-

preciation are, perhaps, *Pioneer Telephone & Telegraph Co. vs. Westenhaver*,² *The Minnesota Raue Cases*,³ and *The People ex rel. Kings County Lighting Co. vs. Public Service Commission*.⁴

In the Pioneer Telephone & Telegraph Case, the Oklahoma Supreme Court does not, however, specify the measure of the depreciation to be deducted.

In the Minnesota Rate Cases, the lower court practically rejected the depreciation factor as applicable to valuation. The Supreme Court, speaking by Hughes, J., holds this ruling to have been erroneous, but rules that the depreciation which should be deducted is "the actual existing depreciation," and cites, as an example, "old structures and equipment remaining on hand."

The Knoxville Water Case, although emanating from the highest judicial authority, did not terminate the struggle about this question. The contest against the depreciation rule was waged more forcibly in a case before the New York Public Service Commission than in any other case. The Appellate Division of the Supreme Court, held however:⁵

(1) That it seems to be thoroughly established that the value of the tangible property upon which the company was entitled to a rate which will procure a fair and just return is the present value—that is, at the time of the appraisal for rate making purposes.

(2) That, in the absence of accurate evidence as to actual value, the cost of reproduction, new, takes the place thereof.

(3) That, as the property valued is not new, in order that "cost of reproduction *new*," may represent the actual condition—the amount presently invested—there must be a deduction therefrom.

(4) "That this represents the amount required to replace apparatus still in use, but in process of wearing out, at the end of useful service."

(5) That this allowance for depreciation has been made in various kinds of cases where the present value is required to be estimated, that is, in condemnation

haver (1911), 29 Okla. 429; *San Joaquin & Kings R. C. & I. Co. vs. Stanislaus*, 163 Fed. 567; *Spring Valley Waterworks vs. City & Co. of San Francisco* (1911), 192 Fed. 137; *Des Moines Water Co. vs. City of Des Moines* (1911), 192 Fed. 193; *Montana, Wyoming & So. R. R. Co. vs. Bd. of R. R. Commrs. of Mont.* (1912), 198 Fed. 991; *The Minnesota Rate Cases* (1912), 230 U. S. 352; *Wyoming & So. R. R. Co. vs. Bd. of R. R. Commrs. of Mont.* (1912), 198 Fed. 191; *Bonbright vs. Corp'n. Commrs. of Arizona* (1913), 210 Fed. 44; *People ex rel. Kings Co. Ltg. Co. vs. Pub. Serv. Commn. of N. Y.* (1913), 156 N. Y. App. Div. 603 (1914), 216 N. Y. 479; *Public Serv. Gas Co. vs. Bd. of Public Utils. Commrs. of N. J.* (1913), 87 Atl. 651; *Murray vs. Public Utils. Commn. of Idaho* (1915), 150 Pac. 47.

² (1911), 29 Okla. 429, 441.

³ (1912), 230 U. S. 352, 457-458.

⁴ (1913), 156 N. Y. App. Div. 603; (1914), 210 N. Y. 479.

⁵ *People ex rel. Kings County Ltg. Co. vs. Public Service Commn.* (1913), 156 N. Y. App. Div. 603, 610-612; *s.e.* (1914), 210 N. Y. 479, 495.

¹ *E. g.*, *Lincoln Gas & Elec. Lt. Co. vs. City of Lincoln* (1909), 182 Fed. 926; *La. R. R. Comm. vs. Cumberland Tel. & Tel. Co.* (1909), 212 U. S. 414; *Home Tel. Co. vs. City of Carthage* (1911), 235 Mo. 644; *Cumberland Tel. & Tel. Co. vs. City of Louisville* (1911), 187 Fed. 637; *Pioneer Tel & Tel. Co. vs. Westen-*

or contract cases, in special franchise tax cases, and in rate cases.

The decision upon the issue of depreciation was made by the Appellate Division of the Supreme Court and not by the Court of Appeals, which is the highest court in the state. The Appellate Division, while wholly rejecting the contention that accrued depreciation should not be deducted from the cost to reproduce new, does not commit itself as to the measure of depreciation to govern cases of this kind, that is, whether functional as well as physical causes should be included, although the Commission itself did use depreciation in its largest measure.

A case expressly recognizing the inclusion of functional depreciation is that of *Des Moines Water Co. vs. City of Des Moines*, decided by the Federal District Court in 1911.¹

The latest "disturbing factor" upon the subject is the decision in *Murray vs. Public Utilities Commission of Idaho*,² decided by the Supreme Court of Idaho on July 1, 1915. It has caused widespread comment, because it explicitly holds that only actual tangible depreciation, and not theoretical or accrued depreciation should be deducted.

There were a few other cases since the Knoxville case which referred to the question of depreciation deduction, but, while following the ruling in the Knoxville Case that depreciation should be deducted, they fail to disclose a commitment as to whether the deduction should cover accrued depreciation as well as actual, and also functional depreciation as well as physical.³

There are a few other questions corollary to the main question. Having determined the measure of depreciation to be applied, the amount to be deducted is purely an engineering question, and a recital of the percentages would not be helpful as indicating principles laid down by the courts.⁴

It has frequently been contended by the public utilities in support of their objection to the deduction

of depreciation from value that, as the depreciation reserve representing the accrued depreciation of the property was not earning a fair return upon the accumulation, the investors were deprived of a return upon the amount of their investment which is depreciated, but for which provision was made through the depreciation reserve. The point seems to have been ignored in the cases, except in the Bonbright case, which holds that depreciation reserve is to be added to the value of the property.⁵

Brief mention may be made of the method of depreciation employed. The straight line, sinking fund and present worth methods are the principal ones. In rate valuations, the courts have generally approved the sinking fund method.⁶

To summarize, it may be stated that the court decisions upon the subject have definitely held that, to test the value of a plant by cost of reproduction, depreciation must be deducted for wear and tear; that the Knoxville Case and the Kings County Lighting Case included in the depreciation both complete and incomplete depreciation, whereas the Minnesota Case referred only to actual depreciation, and the Idaho case permitted a deduction only for actual depreciation, and that the Des Moines Case included in the deduction also functional depreciation, as did impliedly the Kings County Lighting Case. It may fairly be said that there is no leading case expressly holding that functional depreciation should be included in addition to physical depreciation.

DEPRECIATION AS A FACTOR IN ASCERTAINING NET INCOME REPRESENTING RETURN UNDER A RATE

In rate cases, two elements must be determined: (1) the value of the property upon which the utility is entitled to a return; (2) the rate of return upon the value.⁷

Although the public utilities have contended against a deduction from valuation for depreciation, while consumers and officials have contended for it, the contentions are reversed with reference to the deduction from earnings for depreciation. The courts have by no means been in accord upon the answer to the question whether the periodic depreciation allowance should be made at the expense of the consumers, although, if the Knoxville Water Case be accepted as the final authority, the question is now settled. Nor have

¹ (1911), 192 Fed. 193, 197.

² (1915), 150 Pac. R. 47, 50.

³ *Lincoln Gas & Elec. Lt. Co. vs. City of Lincoln* (1909), 182 Fed. 926, 928; reversed in *s.c.* (1912), 223 U. S. 365; *Contra Costa Water Co. vs. Oakland* (1911), 159 Cal. 323, 341-342; *Home Tel. & Tel. Co. vs. City of Carthage* (1911), 235 Mo. 644, 664; *Spring Valley Waterworks Co. vs. City & Co. of San Francisco* (1911), 192 Fed. 137, 145; *San Joaquin & Kings R. C. & I. Co. vs. Stanislaus Co.* (1911), 191 Fed. 875, 881, revisers (1914), 233 U. S. 454; *Montana, Wyoming & Southern R. R. Co. vs. Bd. of R. R. Commrs. of Montana* (1912), 198 Fed. 991, 1004, 1005; *Bonbright vs. Corp'n. Commn. of Arizona* (1913), 210 Fed. 44, 51; *P. S. Gas Co. vs. Bd. of Pub. Util. Commrs.* (1913), 87 Atl. R. 651, 657.

⁴ See Whitten, *Valuation of P. S. Corpsns.*, I. 401, II. 1182; Floy, *Valuation of Public Utility Properties*, p. 108; Foster, *Engineering Valuation of Public Utilities and Factories*, 165; Wyer, *Regulation, Valuation and Depreciation of Public Utilities*, p. 101; *Cumberland I. & I. Co. vs. City of Louisville* (1911), 187 Fed. 637; *San Joaquin & Kings R. C. & I. Co. vs. Stanislaus* (1898), 163 Fed. 567; (1911), 191 Fed. 875, 881; reviser (1914), 233 U. S. 454; *Bonbright vs. Corp'n. Comm. of Arizona* (1908), 210 Fed. 44, 51.

⁵ *Bonbright vs. Corp'n. Commn. of Ariz.* (1908), 210 Fed. 44, 51-52.

⁶ *San Joaquin & Kings R. C. & I. Co. vs. Stanislaus Co.* (1911), 191 Fed. 875, 881; *Cumberland T. & T. Co. vs. City of Louisville* (1911), 187 Fed. 637; *Spring Valley Waterworks vs. City & County of San Francisco* (1911), 192 Fed. 137; *People ex rel. Kings Co. Itg. Co. vs. Pub. Serv. Commn.* (1913), 156 N. Y. App. Div. 603.

⁷ *Contra Costa Water Co. vs. Oakland* (1911), 159 Cal. 323, 328.

the courts been uniform in their opinions as to the measure of such depreciation—whether it should cover accrued depreciation as well as actual, and functional depreciation as well as physical.

The necessity for a public utility to provide a depreciation fund or account is generally recognized. It finds a foundation in efforts to equalize profits during different years, so as to avoid requiring the total cost of improvements to appear as an expense of the year when such improvement proves unserviceable.¹ The necessity, however, grows out of broader considerations than expediency. It is due to the primary obligations of a public utility to render adequate service at reasonable rates.²

In a private business, where the owner may fix his own prices for the use of his property, his own interest may compel him to keep the property he hires to others up to a standard that will induce them to use it, but no one can directly compel him to do so. What interest may force the private owner to do in respect of his own property, the law compels public authority to do when the latter undertakes to fix rates to be charged by public utilities corporations.³

In fixing rates, therefore, the ability of the company to meet these obligations must not be impaired.⁴

The question of what are operating charges against gross income before reaching net income was early considered in several cases. In the conclusions reached by the courts, the judges made an intuitive and perhaps correct distinction between operating charges and capital charges, but the reasoning is by no means clear.⁵

The court explained the underlying necessity for providing against depreciation to be the conservation of the security afforded by the railroad's property to its creditors and the rendering of adequate service.

Yet the real significance of the distinction between the classes of charges is not apprehended by the court, for in the case of *United States vs. Kansas Pacific Railway Company*,⁶ the court, referring to the "principles announced" in the earlier decision, rejects an allowance for depreciation not actually expended, saying:⁷

¹ *Montana, Wyoming & Southern R. R. Co. vs. Bd. of R. R. Commrs. of Mont.* (1912), 198 Fed. 991, 1004.

² *Perkins vs. Northern Pac. Ry. Co.* (1907), 155 Fed. 445, 451.

³ *Cumberland Tel. & Tel. Co. vs. City of Louisville* (1911), 187 Fed. 637, 655-656.

⁴ *Perkins vs. Northern Pac. Ry. Co.* (1907), 155 Fed. 445, 451.

⁵ *Union Pacific R. R. Co. vs. U. S.* (1878), 99 U. S. 402, 420; *U. S. vs. Kansas Pac. R. R. Co.* (1878), 99 U. S. 455; *St. John vs. Erie Ry. Co.* (1874), 89 U. S. 136; *N. Y. L. E. & W. R. R. Co. vs. Nickals* (1886), 119 U. S. 296; *Warren vs. King* (1883), 108 U. S. 389; *Mobile & O. R. R. Co. vs. State of Tenn.* (1894), 153 U. S. 486; *Barnard vs. Vermont, etc., R. R. Co.* (1863), 7 Allen 512; *Minot vs. Paine* (1868), 99 Mass. 101, 106; *Camden, etc., R. R. Co. vs. Elkins* (1883), 37 N. J. Eq. 273; *Dent vs. London Tramways Co.* (1879), 16 Ch. Div. 344.

⁶ (1878), 99 U. S. 455.

⁷ P. 459.

"'Depreciation account, or expense not charged up.' This is explained to be the amount necessary to put the road in proper repair, but which was not actually expended for that purpose. We are clearly of opinion that it is not a proper charge. Only such expenditures as are actually made can with any propriety be claimed as a deduction from earnings."⁸

Clearer understanding is reflected by the subsequent court decisions with reference to depreciation allowance than was reflected with reference to depreciation deduction.

In rate regulation, the fair value basis was not laid down until the case of *Smythe vs. Ames*, in 1898, and the basis was not clearly understood until a number of years later when successive decisions disclosed a preponderating view. For a considerable period, therefore, the relation of depreciation to the ascertainment of the basis of return was not defined. However, as the validity of rates had been attacked because of the insufficiency of resulting earnings, the importance of determining the net earnings was perceived early, and, in their efforts to demonstrate the insufficiency of earnings, the public utilities made every charge against gross earnings that could be supported by reason, practice or law.

In two cases decided in 1896 the court recognized an allowance for depreciation not only representing physical deterioration but also representing functional depreciation.⁹

The proposition that a depreciation allowance should be made received a severe setback, in 1897, in the case of *San Diego Water Co. vs. City of San Diego*.¹⁰ Counsel for the city contended that the court erred in allowing any percentage for "deterioration of the plant," and the court by a divided vote sustained this contention, Judge Fleet saying:¹¹

"With regard to the question of the depreciation of the plant by use, it is sufficient to say that ordinary repairs should be charged to current expense, that substantial reconstruction or replacement should be charged to the construction account, and that depreciation should not otherwise be considered. It is doubtless difficult in many cases to properly discriminate between current and ordinary repairs and such repairs as amount in effect to new construction. Such difficulties, when they arise, must be solved by the application of the principles on which ordinary business enterprises are conducted."

⁸ See also *Reagan vs. Farmers' L. & T. Co.* (1894), 154 U. S. 362, 407; *So. Pac. Co. vs. Bd. of R. R. Commrs. of Cal.* (1896), 78 Fed. 236, 263, 266.

⁹ *Capital City Gas Light Co. vs. City of Des Moines* (1896), 72 Fed. 829, 848; See also *San Diego Land & Town Co. vs. Natl. City* (1896), 74 Fed. 79, 184; *affd.* (1899), 174 U. S. 739; *San Diego Water Co. vs. City of San Diego* (1897), 118 Cal. 556.

¹⁰ (1897), 118 Cal. 556.

¹¹ Pp. 574, 582-583. This decision was cited and followed in *Redlands, etc., Water Co. vs. Redlands* (1898), 121 Cal. 312.

From the views thus expressed by a majority of the Court, Beatty, C. J., strongly dissented, saying:¹

"As to current expenses, all operating expenses reasonably and properly incurred should be allowed, taxes should be allowed, and the cost of current repairs.

"In addition to this, if there is any part of the plant, such as main pipes, etc., which at the end of a term of years—twenty years, for instance—will be so *decayed and worn out* as to require restoration, an annual allowance should be made for a sinking fund sufficient to replace such part of the plant when it is worn out."

The same view adverse to depreciation allowance was expressed in *Cedar Rapids Water Company vs. City of Cedar Rapids*,² in which an action was brought to restrain the enforcement of a city ordinance fixing water rates.

It may be noted, however, that the California decision was in effect reversed in *Contra Costa Water Co.*³ and that the Iowa Supreme Court reversed its position in the case of *Cedar Rapids Gas Light Co. vs. Cedar Rapids*⁴ as the United States Supreme Court had meanwhile held in the *Knoxville Water Case* that an allowance for depreciation must be made out of earnings.

In 1897, the Pennsylvania Supreme Court, in the case of *Brymer vs. Butler Water Company*,⁵ in reversing an order of the lower court which fixed, among other things, the rate for water supplied by a water company (under a statute conferring upon the court visitatorial powers with reference to prices charged for water), held that the cost of the water to the company includes a fair return to the persons who furnished the capital for the construction of the plant "in addition to an allowance *annually* of a sum sufficient to keep the plant in good *repair* and to pay any fixed charges and operating expenses."⁶

A clearer conception of the subject was evinced in *Milwaukee Electric Railway & Light Company vs. City of Milwaukee*.⁷

Thus far, the courts in their allowances for depreciation out of earnings refer, with one exception, only to physical depreciation. That the court would nevertheless be guided by expediency rather than by rule was illustrated in the case of the *Metropolitan Trust*

Company of New York vs. Houston & Texas Central Railroad Company.⁸

By 1899, the rule of depreciation allowance had become recognized and established. From 1899 to 1909, there were a number of cases in which it was held that a depreciation allowance must be made to ascertain the net earnings attributable to the return under a given rate, but they make reference only to physical depreciation or deterioration but not to functional depreciation.⁹

It was not until the decision was rendered by the United States Supreme Court in the *City of Knoxville vs. Knoxville Water Company*,¹⁰ upon an appeal involving the validity of water rates fixed by the municipality, that all doubts upon the right of the utility to have allowance made out of revenues for depreciation before arriving at the return to which a public is entitled, were resolved. In that case, upon this phase of depreciation, Judge Moody said:¹¹

"Before coming to the question of profit at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs but for making good the *depreciation and replacing* the parts of the property when they come to the end of *their life*. The company is not bound to see its property gradually waste, without making provision out of earnings for its *replacement*. It is entitled to see that *from earnings the value of the property invested is kept unimpaired*, so that at the end of any given term of years the original investment remains as it was at the beginning. It is not only the right of the company to make such a provision, but it is its duty to its bond- and stockholders, and, in the case of a public service corporation at least, its plain duty to the public. If a different course were pursued the only method of providing for replacement of property which has ceased to be useful would be the investment of new capital and the issue of new bonds or stocks. This course would lead to a constantly increasing variance between present value and bond and stock capitalization—a tendency which would inevitably lead to disaster either to the stockholders or to the public, or both. If, however, a company fails to perform this plain duty and to exact sufficient returns to keep the investment unimpaired, whether this is the result of unwarranted dividends upon over-issues of securities, or of omission to exact proper prices for the output, the fault is its own. When, therefore, a public regulation of its prices comes under question the true value of the property then employed for the

⁸ (1898), 90 Fed. 683, 690.

⁹ *City of Grand Haven vs. Grand Haven Water Works* (1899), 119 Mich. 652; *San Diego Land & Town Co. vs. Natl. City* (1899), 174 U. S. 739, 757; *San Diego Land & Town Co. vs. Jasper* (1903), 189 U. S. 439, 446; *Spring Valley Water Works vs. City & County of San Francisco* (1903), 124 Fed. 574, 599; *Stanislaus Co. vs. San Joaquin C. & I. Co.* (1904), 192 U. S. 201, 215, revg. s.c. (1902), 113 Fed. 930; *Perkins vs. Northern Pac. Ry. Co.* (1907), 155 Fed. 445, 451; *San Joaquin & Kings R. C. & I. Co. vs. Stanislaus* (1908), 163 Fed. 567, 572; *Spring Valley Water Co. vs. City & Co. of San Francisco* (1908), 165 Fed. 667, 702-704.

¹⁰ (1909), 212 U. S. 1.

¹¹ P. 13.

¹ P. 588.

² (1902), 118 Ia. 234, 263.

³ (1911), 169 Cal. 323.

⁴ (1909), 144 Ia. 426.

⁵ (1897), 179 Pa. St. 231, 251.

⁶ This case was followed in *Wilkes-Barre vs. Spring Brook Water Supply Co.* (1899), 4 Lack. Leg. News 367, where, however, only 1 per cent was allowed, and was cited with approval in *Long Branch Commn. vs. Tintern Manor Water Co.* (1905), 70 N. J. Eq. 71, 82.

⁷ (1898), 87 Fed. 577, 582.

purpose of earning a return cannot be enhanced by a consideration of the errors in management which have been committed in the past."

The decision, while emphatically holding that a depreciation allowance should be made, is ambiguous upon the question whether the allowance should cover functional as well as physical depreciation.

Following the Knoxville decision, there were a few decisions in which a depreciation allowance was allowed, without any indication by the court as to whether functional depreciation should be included,¹ but the principal cases since 1909 not only recognize that the depreciation allowance should include accrued as well as actual depreciation, but also hold that it should include provision for obsolescence, inadequacy and other functional depreciation. Indeed, the preponderance of opinions since the Knoxville Case is in that direction. In this regard, the inclusion of functional depreciation in the depreciation allowance contrasts sharply with the deduction for depreciation from reproduction cost.

Soon after the Knoxville decision, the Iowa Supreme Court, in the rate case of *Cedar Rapids Gas Light Company vs. Cedar Rapids*, limited the allowance to physical depreciation and refused to make an allowance for functional depreciation.²

Upon appeal, the United States Supreme Court held that while the court "perhaps should have adopted a rule as to depreciation somewhat more favorable to the plaintiff," there was nothing that the Court could take notice of to warrant a change in the result.³

A clear trend in the direction of allowing for functional depreciation was marked by the Federal Court, in 1911, upon a final hearing in the case of *Cumberland Tel. & Tel. Company vs. City of Louisville*.⁴

One of the leading decisions on rate regulation, in which the subject of depreciation is extensively discussed, is that of *Pioneer Tel. & Tel. Company vs. Westenhaver*,⁵ and the court there fully recognizes functional causes as elements in the amount that should be allowed from earnings for depreciation.

That the depreciation allowance should include the elements of functional depreciation was even more strongly expressed in *Spring Valley Waterworks vs. City of San Francisco*.⁶

¹ *Twitshell vs. City of Spokane* (1909), 55 Wash. 86, 89; *Contra Costa Water Co. vs. Oakland* (1911), 159 Cal. 323, 336-337; *San Joaquin & Kings R. Canal & Irr. Co. vs. Stanislaus* (1911), 191 Fed. 875, 886, 887, reversed in *s.c.* (1914), 223 U. S. 454.

² (1909), 144 Iowa, 426, 444, 445-446.

³ *Cedar Rapids Gas Co. vs. C. R.* (1912), 223 U. S. 655, 670; *See also Home Tel. Co. vs. City of Carthage* (1911), 235 Mo. 644, 665-666; *Puget Sound Elec. Ry. Co. vs. R. R. Commn. of Wash.* (1911), 65 Wash. 76, 81-82.

⁴ (1911), 187 Fed. 637, 654.

⁵ (1911), 29 Okla. 429; 451, 453-454.

⁶ (1911), 192 Fed. 137, 184.

The disposition of the courts is in favor of a liberal allowance as is reflected in the decision in *Home Telephone Company vs. City of Carthage*.⁷

The courts have often confessed the difficulty of determining the amount of depreciation allowance.⁸

The public utility is not entitled to have any allowance made in the annual fixing of rates to cover any past depreciation.⁹

The allowance for depreciation reserve should not be used for additions to capital account, to be included in the fair value of property as a basis of return.¹⁰

In *Louisville & Nashville R. R. Co. vs. Railroad Commission of Alabama*,¹¹ the special master rejects the contention by the Railroad Commission that in determining current income, interest should be allowed on the balance in the replacement account.

The straight line method of determining depreciation allowance is generally used.¹²

It is settled that accrued depreciation should be deducted from the valuation and should be allowed in computing earnings, but as previously remarked, while there is not yet a preponderance of decisions in favor of the inclusion of functional depreciation in the deduction, the trend of authorities since the Knoxville Case is in favor of the allowance for functional depreciation out of earnings.

The purposes of depreciation deduction and depreciation allowance are different, for in the case of deduction from reproduction value it has been used for determining the amount of property within the constitutional guarantee, while in the case of depreciation allowance out of earnings it has been used for assuring the conservation of the investors' capital and the maintenance of the plant's operating continuity and efficiency. It may be that, viewing the problem without regard to the constitutional guarantee, but from the standpoint of equitable consideration, it should not be necessary to include functional depreciation and even accrued depreciation in order to reach a fair basis of return. In

⁷ (1911), 235 Mo. 644, 666.

⁸ *Spring Valley Water Works vs. City and County of San Francisco* (1911), 192 Fed. 137, 185; *Pioneer Tel. & Tel. Co. vs. Westenhaver* (1911), 29 Okla. 429, 453; *Cumberland Tel. & Tel. Co. vs. City of Louisville* (1911), 187 Fed. 637, 653; *Puget Sound Elec. R. vs. Railroad Commn.* (1911), 65 Wash. 75, 83; *Lincoln Gas & Elec. Lt. Co. vs. City of Lincoln* (1912), 223 U. S. 349, 363.

⁹ *City of Knoxville vs. Knoxville Water Co.* (1909), 212 U. S. 1, 14; *Contra Costa Water Co. vs. Oakland* (1911), 159 Cal. 323, 338; *Puget Sound El. Ry. Co. vs. R. R. Commn. of Wash.* (1911), 65 Wash. 75, 81-82.

¹⁰ *La. R. R. Commn. vs. Cumberland T. & T. Co.* (1909), 212 U. S. 414, 424, 425.

¹¹ (1911), U. S. Circuit Court, Middle District of Alabama, Report of William A. Gunter, Special Master in Chancery; *s.c.* appd. (1912), 196 Fed. 800.

¹² *Cumberland Tel. & Tel. Co. vs. City of Louisville* (1911), 187 Fed. 637, 655; *Louisville & Nashville R. R. Co. vs. R. R. Commrs. of Alabama* (1911), U. S. Circuit Court, Middle Dist. of Alabama, Report of Wm. A. Gunter, Special Master in Chancery.

that connection, other factors would have to be considered.

DEPRECIATION AS A FACTOR IN DETERMINATION OF VALUE IN CONDEMNATION AND PURCHASE CASES

The value of property for rate purposes is in several essentials different from that for purchase and condemnation. A rule of valuation might be adopted in a condemnation case which would not work in a rate case.¹

The authorities in condemnation and purchase cases have deducted depreciation to determine physical value.²

In *Newburyport Water Co. vs. Newburyport*, the Commissioners of Appraisal of the fair value of water property acquired by the city pursuant to statute adopted among the "elements of valuation" the "cost of reproduction of all that part of the physical plant used in pumping and delivering water, less any depreciation." This method was employed without objection by all the experts who testified, and Judge Holmes, for the court, accepted the commissioners' award.

This rule was followed in *Gloucester Water Supply Co. vs. Gloucester*.

In *Kennebec Water District vs. Waterville*,³ a leading case on the subject, Judge Savage held that, while "the actual cost of the plant and property together with proper allowances for depreciation" was "competent evidence" upon the question of the present value of them, it was, however, "not conclusive."

Thus far nothing has been declared by the court as to the elements to be included in depreciation, but in 1902, in the Holyoke, Mass., purchase case, the court held that functional depreciation should be included in the deduction of depreciation from the reproduction cost.⁴

The question of what method should be adopted in calculating the depreciation is not discussed in the purchase and condemnation cases, perhaps because the courts have used the same method that was used either by the public utility or in the decisions involving depreciation in relation to rate determination. A

recent English case, after discussing this question, adopted the straight line method.⁵

We find little discussion of the subject of depreciation in condemnation and purchase cases, and there is yet no preponderance as to the measure of depreciation to be applied although the trend in this country is toward including functional depreciation as an element of accrued depreciation.

DEPRECIATION AS A FACTOR IN TAX CASES

Depreciation as a factor in tax cases has been recently discussed in the New York franchise tax cases which furnish the inspiration of the advanced views on this subject expressed in various relations.

It should be noted, however, that the decisions in tax cases do not give the subject such precise consideration as in rate cases, because it is not certain what weight tax officials give to the several elements of their valuation. It is not necessary in valuing a property as a totality for taxation to disintegrate the various elements which enter into it and ascribe to each its separate fraction of valuation.⁶ In taxation cases, the problem of valuation is different from that in rate cases, because in the former the fair value is the basis, whereas in the latter actual value is the basis.

Whether any deduction on account of depreciation should be made from the value of the property, in these cases, is not clear.⁷

In computing operating expenses, the judges have held that the utility company is entitled "to set aside each year from its earnings a reasonable sum to provide for its [property] replacement."⁸

The Supreme Court of New York strongly emphasizes functional depreciation as an element, saying:⁹

"As surely as humanity travels to the grave, the machinery and equipment of a public service corporation travel toward the scrap pile. The plant and structures depreciate in less degree, but as certainly. This is ordinary depreciation.

"But another form of depreciation in the case of properties here being valued takes place. The machinery or equipment, while still capable of years of service, becomes inadequate to do the work demanded—not only by the corporation but by the law itself. In the case particularly of electrical machinery, the type becomes obsolete by reason of invention, and increasing public demands frequently require in aid of

¹ *Spring Valley Water Works vs. San Francisco* (1911), 192 Fed. 137, 155; *Peo. ex rel. Kings County Lighting Co. vs. Public Service Commission* (1913), 156 App. Div. 603.

² *Newburyport Water Co. vs. Newburyport* (1897), 168 Mass. 543, 544; *Gloucester Water Supply Co. vs. Gloucester* (1901), 179 Mass. 365.

³ (1902), 97 Me. 185, 207.

⁴ The report of the commissioners was confirmed by the court with the consent of both parties, November 18, 1902. For an abstract of the report of the commissioners, see Massachusetts Gas and Electric Light Commissioners, Annual Report, 1903, pp. 77-82. Functional depreciation as an element as of accrued depreciation was rejected in an English purchase case of some importance. *National Telephone Co., Ltd., vs. His Majesty's Postmaster-General*, (1913), 16 A. T. & T. Co. Com. L. 491, 536, 538 (Sir James Woodhouse, Court of Railway and Canal Commission).

⁵ *Nail. T. Co. vs. His Majesty's P. M. Genl.* (1913), 16 A. T. & T. Co. L. 491, 538.

⁶ *Peo. ex rel. Brooklyn City Railroad Company vs. New York State Board of Tax Commissioners* (1905), 199 U. S. 48.

⁷ *People ex rel. Third Av. R. R. Co. vs. State Bd. of Tax Commrs.* (1909), 136 N. Y. App. Div. 154, affd. 198 N. Y. 608.

⁸ *People ex rel. 3rd Av. R. R. Co. vs. State Bd. of Tax Commrs.* (1909), 136 N. Y. App. Div. 154, affd. 198 N. Y. 608; *Peo. ex rel. Jamaica Water Supply Co. vs. Tax Commrs.* (1909), 196 N. Y. 39, 58-59.

⁹ *Peo. ex rel. Brooklyn Heights R. R. Co. vs. State Board of Tax Commrs.* (1910), 69 Misc. 646, 657, 659.

safe and adequate service that the obsolete appliance or equipment give way to the new. . . . This would appear to be a legislative recognition of the systems adopted providing for the charge, out of income, of items for obsolescence and inadequacy, upon a plan which apparently, according to the State, was reasonably capable of ascertainment from the experience of the corporation itself.

"The policy of the State to-day, so reflected by statute, is in favor of these charges out of earnings. . . . The corporations must provide under the present statute safe and adequate service. Upon this the statute is insistent and the higher power has been conferred upon the Commission to see that this provision of the law is complied with.

"To provide safe and adequate service is not to maintain old and obsolete cars even though by constant repair they may be kept from dissolution. It is to keep in touch with the times, and to displace obsolete or inadequate appliances or structures with new and approved appliances. These expenditures come suddenly in some cases—in others their approach may be apprehended."¹

The straight line method, rather than the sinking fund method, of computing depreciation has been adopted in these franchises tax cases.²

These cases leave no doubt that depreciation allowance out of earnings should make provision for accrued depreciation and for functional depreciation. The question as to what are net earnings is the same in a franchise tax case as in a rate case, because the same credits and debits are made. Therefore, the measure of depreciation allowances out of earnings applied in franchise tax cases is equally applicable in principle in rate cases with reference to the ascertainment of earnings attributable to the return.

DEPRECIATION AS A FACTOR IN ACCOUNTING

The United States Supreme Court has well stated:

"Since the regulation of the railroad carrier by the public authority, and especially the fixing of rates to be charged, depend primarily upon two fundamental considerations: (a) the value of the property that is employed in the public service, and (b) the current cost of carrying on that service, it is clear that the maintenance of a proper line of distinction between property accounts and operating accounts is essential to the execution by the Interstate Commerce Commission of the supervisory and regulatory powers conferred upon it by Congress."³

The early failure to recognize the factor of depreciation was accompanied by its neglect in the accounts of utilities. In the regulation of public utilities, uni-

formity of accounts and the application of correct accounting principles to ascertain the true financial situation of the utility are conspicuous features because they are important to the public, the corporate management, and the investors. Systems of accounts have been formulated by regulatory boards for the purpose of insuring the integrity of "capital" and the correctness of the charges to "cost of operation."⁴

As an operating charge, depreciation must be given due attention in the company's accounts. It has been suggested that, if a company does not reserve a sufficient portion of its revenue to replace capital consumed during the year but not requiring replacement within the year, and then proceeds to treat the entire surplus as divisible profits, it is actually violating the criminal statute, such as there is in New York, against the declaration of dividends out of capital just as effectually as though it sold stock and distributed the proceeds immediately in the form of dividends.⁵

Depreciation accounts have a vital and direct relation to income bonds and mortgages issued by public utilities, because interest cannot be paid until all operating charges have been met.⁶

"The distinction between ordinary repairs and repairs made in ordinary reconstruction of the plant may not be accurately drawn, but absolute accuracy is not required in such details."⁷

Whether depreciation charges upon the accounts of a public utility should include also obsolescence and inadequacy was decided in *Kansas City Southern Railway Company vs. United States*.⁸ The orders of the Interstate Commerce Commission, establishing a uniform system of accounts, required the deduction from the cost of additions and betterments of the value or estimated value, less salvage, of property abandoned and the charging of the value or estimated value, less salvage, of the property abandoned to operating expenses. The carrier's contention, said the Supreme Court, per Pitney, J.,

"will be found, upon analysis, to rest upon the unwarrantable assumption that all capital expenditures result in permanent accretions to the property of the company. This in effect

⁴ Maltbie Commr., *In re Uniform System of Accounts* 1 P. S. C. R., 1st Dist. N. Y. 756, 777; *People ex rel. Brooklyn Hts. R. R. Co. vs. Tax Commrs.* (1910), 69 Misc. 646, 567-658.

⁵ Maltbie, Commr., *re Metropolitan Street Railway Co. Reorganization* (1912), 3 P. S. C. R., 1st Dist. N. Y. 113, 131.

⁶ *Re Metropolitan Street Ry. Co. Reorganization* (1912), 3 P. S. C. R., 1st Dist. N. Y. 113, 131. See, in this connection, a case pending in the courts upon a *certiorari* of the Commission's order for a depreciation reserve: *Re amortization account of Third Avenue Railway Company* (1912), 3 P. S. C. R., 1st Dist. N. Y. 51; *re Metropolitan Street Railway Company Reorganization* (1912), 3 Id. 113; *re depreciation account of New York Railways Co.*, 6 P. S. C. R., 1st Dist. N. Y., advance sheets, July, 1915.

⁷ *San Joaquin & Kings R. Co. & I. Co. vs. Stanislaus* (1911), Fed. 875, 887.

⁸ (1913), 231 U. S. 423, affg. 204 Fed. 641.

¹ To the same effect, see *People ex rel. Queens Co. Water Co. vs. Woodbury*, decided in 1910, Blackmar, J. (1910) 67 Misc. 490, 493, affd. 143 A. D. 618, affd. without opinion, 202 N. Y. 619.

² *Peo. ex rel. Manhattan Railway Co. vs. Woodbury* (1911), 203 N. Y. 231.

³ *Kansas City Southern Ry. Co. vs. U. S.* (1913), 231 U. S. 423, 445, affd. 204 Fed. 641.

ignores depreciation—an inevitable fact which no system of accounts can properly ignore. A more complete depreciation than that which is represented by a part of the original plant that through destruction or obsolescence has actually perished as useful property, it would be difficult to imagine. The fact that the original investment was necessary in order that the second investment might be made is not a conclusive test. . . .

“And since one of the manifest objects of Congress is authorizing the supervision and standardization of carriers’ accounts . . . was to enable the Commissioners to intelligently perform their duties respecting the regulation of carriers’ rates for the service performed, and since it is settled that the property investment which is to be taken into consideration as one of the elements in fixing such rates is the property then in use [citing cases], it is obvious that so far as the regulations of the Commission now under consideration discard the ‘cost of progress’ theory, they need no further vindication.”

In its relation to accounts, the court has therefore applied functional as well as physical depreciation and accrued as well as actual depreciation.

DEPRECIATION AS A FACTOR IN CAPITALIZATION

The growth of public utility regulation and its extension to capitalization have added a very important class of cases involving the factor of depreciation.

The primary object of regulating capitalization was to correct the evils of the imposition upon the public by the issues of stocks and bonds of public service corporations for improper purposes, without actual consideration therefor, by corporation officers seeking to enrich themselves at the expense of innocent confiding investors.¹ But the financial disasters which overtook a number of public utilities disclosed that a greater evil lay in the capitalization of the cost of property used not as additions to capital, but as replacements, and in the failure to provide a depreciation reserve to cover such replacements.

In *People ex rel. Binghampton Light, Heat & Power Co. vs. Public Service Commission*,² upon *certiorari* to review an order of the second District Commission denying an application in part for the approval of an issue of bonds to refund indebtedness, although the Court of Appeals reversed the determination of Commission, it said:

“A reasonable consideration of the interests of a corporation and the ultimate good of its stock and bondholders, and a regard for the investing public and that fair dealing which should be observed in all business transactions, require that machines and tools paid for and charged to capital account but which necessarily become obsolete or wholly worn out within a period of years after the same are purchased or

installed should be renewed or replaced by setting aside from time to time an adequate amount in the nature of a sinking fund or that by some other system of financing the corporation put upon the purchaser from the corporation the expense not alone of the daily maintenance of the plant but a just proportion of the expense of renewing and replacing that part of the plant which, although not daily consumed, must necessarily be practically consumed within a given time.”³

In *People ex rel. Westchester Electric Railroad Company vs. Public Service Commission*,⁴ upon a *certiorari* to reverse an order of the Second District Commission disapproving in part an application for approval of an issue of stock pursuant to a reorganization plan upon foreclosure, the Commission having made a valuation of the property, the Appellate Division in reversing the Commission’s order said (Kellogg, J.):

“It was proper to deduct from the estimated reproductive cost proper depreciation resulting from *age and use*; also, if age and use in any way depreciated the property, that should have been considered.”

The courts have not indicated the measure of non-capitalizable depreciation. Salutory results have been accumulating of the observance of the rules laid down with regard to the depreciation element affecting capitalization.

CONCLUSION

The importance of distinguishing between the various purposes of depreciation has not been grasped. In the earlier rate cases, growing out of state or local legislation or out of determinations by supervising officials, usually without adequate investigation of relevant data, the public utilities were obliged to invoke the aid of the courts to prevent the confiscation of their property rights, and in the decision of that question the court’s first inquiry was: “What are the property rights?” As property which by expiration had ceased to exist could not be the subject of confiscation, the courts, with the only object of determining what property rights were affected, soon adopted the method of reproduction cost less depreciation for ascertaining what the property was.

Depreciation deduction was, therefore, confined to actual depreciation. When, however, the question of earnings came to be considered, a new light was cast upon the subject. The duty and importance of providing out of earnings against the impairment of the capital invested, and for the maintenance of the integrity of the plant for continuous and efficient service, was already realized. In this relation functional depreciation and accrued depreciation received recognition. The failure to distinguish between the different

¹ *Peo. ex rel. Delaware & Hudson Co. vs. Stevens* (1911), 197 N. Y. 1.

² (1911), 203 N. Y. 7.

³ Applied in *Peo. ex. rel. D. D. E. B. & C. R. R. Co. vs. Public Service Commission* (1915), 167 App. Div. 286, 303.

⁴ (1913), 158 App. Div. 251, *affd.* 210 N. Y. 456, 211 N. Y. 533.

purposes of depreciation soon brought about a confusion as to the measure of depreciation which should be applied to the different purposes, and the expressions used in the case of one were applied to the other. But it should be borne in mind that in the earlier rate cases the courts were concerned purely with the question of whether the result under the rate was confiscation of property rights or denial of equal protection. Regulating bodies, however, are not confined to the narrow question of confiscation.

The courts in reviewing orders of public service commissions are likewise not confined to that question. Not thus limited in their review, the courts, in appeals from decisions of Commissions, have greater opportunity for meeting the much felt need of a definition of depreciation in order that we may understand its scope in any aspect, and the formulation of rules as to the measure to be applied to particular classes of cases in order that each class may be governed by the principles peculiar to it.

DEPRECIATION AND ITS RELATION TO THE FAIR VALUE

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THIS paper deals with depreciation and its relation to the fair value in the appraisal of the physical property of public utilities. The treatment that should be accorded accrued depreciation in determining the fair value of such property is a subject upon which much is written to-day and concerning which there are about as many opinions as there are writers. The methods under which accrued depreciation and the fair value of such property are now determined do not as yet appear to be as well developed or settled as many who in one way or another are interested in such appraisals would wish them to be. The subject is, indeed, a broad one. It enters into and is a part of nearly all of the more important questions that are connected with such appraisals. It is so comprehensive in fact that it cannot be fully discussed in one short paper. In this paper, therefore, no attempt is made to cover the entire field. This paper is, in fact, limited to a brief discussion of the nature of the terms, fair value and depreciation, and to how, in the light of the facts and principles involved, accrued depreciation and the balances in the depreciation reserve should be treated in determining the fair value of public utilities.

FAIR VALUE

The fair value of public utility property, when these utilities are operating under normal conditions, may be defined as the normal cost of obtaining the capital or property needed. This definition or basis is taken from the competitive field. Value originates in the wants of man. These wants may be satisfied by commodities and service. Commodities and services which satisfy such wants are said to possess utility and are much sought after. When such commodities are scarce and cannot be had without labor or sacrifices of some

kind, they are also said to have value. Value is usually said to be of two kinds—subjective and objective. Subjective value is the value attached to a thing by an individual. Objective value is the so-called exchange value or the price at which goods and services are exchanged in the market. It is mostly with exchange value that we are concerned here.

Such value is in a sense determined by free competition, by monopoly conditions, by public authority and by other forces. Under free competition value is largely fixed by supply and demand. Under this system values or prices tend to equal the expenses of production when these expenses or cost include ordinary operating expenses, depreciation and reasonable returns for interest and profits upon the investment. When in any line of business prices yield more than the cost thus outlined, additional competitors enter the field, the effect of which is to increase the supply and consequently to decrease the price. When prices fall below the cost of production, existing competitors tend to withdraw from the field until the supply is reduced and the prices raised. It is through the operation of these forces that value or price tends to equal the cost of expense of production. Value fixed in this way is usually regarded as the normal value. It is assumed to be a value that is equitable and fair to all concerned.

Under monopoly conditions prices are usually fixed at the level where they yield the greatest net returns. This level is as a rule higher than the level of prices under free competition. The main reason for this difference is that under monopoly conditions the producers have so much better control over the supply that they are able to exact higher prices. Prices fixed under such conditions may therefore be contrary to public interest.

Public authorities, in fixing values and prices, are

supposed to be governed by principles of equity and justice. To that end they mostly rely for guidance upon conditions which obtain under free competition. Normal values or prices such as are fixed by free competitive forces and which tend to equal the cost of production are, therefore, largely adopted by public authorities as the basis for the value or price which they fix. As such values are generally recognized as fair, no better standards could probably be adopted. When the normal values as fixed by competition are applied as bases for fixing values of public utilities and other enterprises where monopoly conditions obtain, the relations upon which values depend are to a considerable extent altered. Under competitive conditions the value of capital, or production goods, is largely determined by what is regarded as the normal earnings. In the public utility or monopoly field, when values are based on competitive results, it is the normal value thus fixed that largely determines the amount to be earned. In the competitive field, value usually depends on normal earnings; in the regulated monopoly field earnings mostly depend on normal value.

By the term cost of production as a price regulator in the competitive field is frequently meant the cost of reproduction. This is especially true when considerable changes have taken place in the cost of production between the time the commodities were actually produced and the time they are sold. This is of the greatest importance. In all probability it is responsible for the fact that courts and other public authorities in determining the fair value of public utilities are guided by both the original cost and the cost of reproduction of the property and business. Reliable facts bearing upon these two costs are therefore necessary in the work of determining the fair value of the property of public utilities.

By original cost in this connection it seems to me should be understood the cost at which the existing property used by public utilities in rendering service was acquired. By cost of reproduction is meant the cost of reproducing the existing property under prevailing conditions. The original cost of the existing property should be shown by the books and records of the utilities provided these have been properly kept and are still in existence. When the books have not been so kept or are not available, the original cost as thus outlined may be determined very much in the same manner as that in which the cost of reproduction is found.

In order to determine the cost of reproduction it is necessary to have complete inventories of all the material, labor and services that have entered into the plant. To this end it is further necessary to have complete price lists of such material, labor and services

covering not only existing prices, but the prices that have prevailed for some years in the past. In the case of prices which fluctuate sharply, it may also be necessary to weight these prices. Consideration should further be given to the general trend in the course of the prices. To do so is important, since most valuations are made for the future as well as for the present.

When the original cost of the existing property is desired it can be computed upon the same inventory as that used in determining the cost of reproduction and upon prices which cover the period when the property involved was put into the plant. Such price lists may be had partly from the records of the plant and partly from other sources. In this way the original cost of the existing property can be had with even greater accuracy than the cost of reproduction.

NATURE OF DEPRECIATION

In the appraisal of public utilities, it is usually necessary and customary to determine the count of the depreciation that has accrued in the depreciable property. When such accrued depreciation is deducted from the original cost and the cost of reproduction of the property, facts are obtained upon which it is possible to determine the so-called existing value of the property in use. In addition to this, the rate at which the property is depreciating is also a fact upon which information is much needed in connection with the question of providing for accruing depreciation in the rates charged for the service. To have as much information as possible concerning depreciation is therefore of the greatest importance.

The greater proportion of the property of public utilities is constantly deteriorating through use and otherwise, until it becomes inefficient or useless and must be replaced by new property or units. The process of thus providing and maintaining the necessary capital under the capitalistic method of production is described by R. T. Ely in his *Outlines of Economics* as follows:

"The stock of capital in existence at any one time is the result of savings. But this stock of capital cannot be maintained intact without more savings. From this point of view we may say that the sacrifice of present goods for future goods which society undergoes in order to reap the advantages of capitalistic production is not something that is done once for all, but is a continuous sacrifice."

The causes of such depreciation are usually grouped under four heads, wear and tear, age or general decay, inadequacy, and obsolescence. Of these wear and tear, and age or general decay, are of a physical nature, while inadequacy and obsolescence are of a social nature. Such depreciation as that which is due to

changes in the value of money and to the relation of supply and demand and other general causes of this nature are not included in the depreciation in question here.

Under wear and tear are usually classed the wearing out and breaking of the minor parts of larger units or equipment. These parts must be repaired or replaced in order that the working efficiency of the unit may be kept up. Age, physical decay or decrepitude represents the wear and tear or general decay of the larger units as a whole, which decay cannot be made good by minor renewals or without replacing the unit itself. It is largely due to the action of the elements upon physical things. Inadequacy is that reduction in value which arises from unexpected developments and growth in population and business, public requirements and other similar causes. Obsolescence is depreciation due to progress in the art and to the development of more modern and effective methods.

In private undertakings, under free competition, the prices in the long run are high enough to cover operating expenses, depreciation and sufficient returns for interest and profits to obtain the necessary capital and enterpriser. Whether under free competition, the amounts thus obtained from the public for depreciation are put aside in a reserve until needed for renewals or paid over to the stockholders or owners, makes but little difference since the renewals must be made when needed, if the plant is not going to be crowded out of business. Under free competition producers are forced as a matter of self-preservation to maintain their plants at the requisite standards of efficiency.

In public utilities where active competition is largely absent, less can as a rule be safely left to the judgment of the investors or operators. In this field it has therefore become necessary to require by law that which is not brought about through competition. In order to keep up the service and maintain the investment, public utilities are mostly authorized by law to include the depreciation in the charges which they make for the services they render and are also required to place the amount so collected for depreciation in a reserve until needed for renewals. In this way the interests of both the customers of the utility and the investors therein are best safeguarded. To charge depreciation to the public is necessary in order to obtain the capital needed. Investors will not in the long run furnish capital unless it is maintained and unless they receive the ordinary returns thereon. This is as true in the public utility field as in competitive industries. To charge depreciation to the customers is also just from an equitable point of view because depreciation represents capital that is used up in production and is, therefore, a part of those costs of the products

that must be covered by the prices that are obtained for them. No undertaking, either in the public utility or in the competitive field, can be regarded as a success or as a more permanent institution unless its earnings are high enough to cover reasonable amounts for the operating expenses and the maintenance of, and returns on, the capital involved.

HOW DEPRECIATION IS DETERMINED

From what has been said it appears that cost of repairing ordinary wear and tear as well as the cost of renewing such depreciation as is due to age or general decay, inadequacy and obsolescence are just charges to the operating expenses. When the ordinary repairs are charged directly to the operating expenses, the amount that it is necessary to provide for depreciation during the useful life of the property is the difference between the cost of this property and its salvage or scrap value. The amount that should thus be provided annually for such depreciation depends upon the cost of the property and the length of its useful life.

To correctly measure depreciation is difficult. The main reason for this is that the useful life of the property depends upon many factors, the precise effect of which cannot often be accurately estimated in advance. To obtain a fairly good idea of the life of the property, however, is of the greatest importance. Upon it depends very largely whether the provisions that are made for depreciation will be found to be adequate when the property must be renewed. In order to correctly measure depreciation it is therefore, among other things, necessary to know the cost and salvage value of the property, its probable useful life until it has to be renewed because of age, or general decay, and whether this life is likely to be shortened through such causes as inadequacy and obsolescence. The elements that are involved in determining the effect upon the life of the property by each of the three causes mentioned are too numerous to be explained in detail here.

The cost of the property thus involved can usually be had from the records of the plant or from other sources. For reliable information as to the probable useful life of such property, however, the appraisers must usually rely on both general and special information obtained from others as well as from their own knowledge and experience in such matters. Much general information as to the life of such property is usually found in life tables compiled under varying conditions. Such tables are useful, but may not take full account of conditions that are peculiar to the plant under review. Special conditions of this kind can only be discovered and measured by personal examinations by competent appraisers. It is under such conditions that personal experience and careful

inspection become of the greatest importance. Experience, however, indicates quite clearly that the best results are obtained when both life tables and the personal inspection method are employed in estimating depreciation. This is true, regardless of whether the information desired relates to past depreciation of existing property or to the probable future rate of depreciation of the plant. In order to obtain full light upon the situation it is usually necessary to know the cost and life of each unit of property as well as of the plant as a whole.

HOW DEPRECIATION SHOULD BE PROVIDED FOR

It has thus been pointed out that from a legal, as well as from an economic point of view, depreciation as defined above is properly chargeable to the operating expenses of a plant or to the cost upon which its rates for service are based. It has also been shown that such depreciation amounts to the difference between the cost of the property and its salvage value and that the annual charge depends on the cost and life of the property. It has been said further that, while depreciation is not easily determined, a fairly good measurement of it may be had from past experience formulated into life tables and from personal observation under close inspection of the property. The question now is how can depreciation be best and most economically provided for in the charges which are made for it in the rates for the services rendered.

The fact that depreciation, the same as ordinary repairs, is a proper charge to the operating expenses has not always been generally recognized. This failure to recognize the true nature of depreciation has often been more or less responsible for practices that, from an economic point of view at least, may be looked upon as rather questionable. Thus the cost of renewals has often been charged to construction and paid for by the proceeds from additional security issues. It has probably also caused many investors to think that the profits in the public utility and other fields were greater than is actually the case and to make investments therein on terms which they otherwise would not have accepted. To charge renewals to capital instead of to the operating expenses is out of line with public policy. This becomes clear when the facts involved are viewed in the light of recognized economic theories. Only in exceptional cases, such as the destruction of property through undeserved calamities and accidents, and under highly abnormal conditions in other respects, would it seem to be just to charge renewal to the capital accounts, and even in such cases such charges should, as a rule, only be for limited periods.

Ordinary repair charges are fairly regular. These

charges can therefore go directly to operating expenses without causing undue fluctuations therein. With depreciation proper the situation in this respect is different. Such depreciation is constantly going on and on. The whole is about the same one year as the other. The actual outlays for renewals, however, are irregular and for most plants are much greater during some years than during other years. These outlays are in fact of such nature that, in most cases, they cannot be equally distributed from year to year. In order to prevent serious fluctuations in the operating expenses and in the net earnings, and in order also to keep the investment intact, it is, as a rule, best to provide for such renewals in advance through regular annual charges to the operating expenses, which charges are adjusted as closely as possible to the time during which depreciation is accrued and which charges, when collected from the customers, are set aside as a reserve until needed for renewals. The larger plants or combinations of plants including railways, however, are often able to so adjust their renewals that the charges for the same remain somewhat more constant from year to year. When this is the case it is not always necessary to provide for depreciation in advance in order to equalize the charges to the operating expenses or to keep up the service.

In such cases the cost of the renewals when incurred, like repairs, can often be charged directly to the operating expenses. The cost of current renewals alone, however, does not cover all the depreciation that has accrued in a plant. Owing to the fact that much of the property at any given period necessarily has been in use for some time, the service value is always less than the cost. Unless this difference has been made good by charges to the customers, the investment has not been kept intact. As long as the standard of upkeep is high and the service is adequate, and as long as they are not required to bear depreciation that should have been borne by previous users, the customers of the plant would probably not object to this practice. To them it would then simply mean that they might, for a time at least, be relieved from making good a part of the capital that had been used up in serving them. For the investor, however, the situation would be different. His investment through this practice would not be kept intact. The extent to which it would fall short of this would be measured by the amount of the accrued depreciation of his property and the amount to cover such depreciation that had been collected from the customers. Should this difference between the accrued depreciations and the provisions for covering it ever have to be made up, it is also likely that under this practice, owing to the fact that customers are constantly

changing, it would have to be borne by others than those for whose benefit the capital was used up.

In view of all this it would seem that for public utilities which are institutions of a public nature and for which both the customers and the investors are constantly changing, the best and most equitable practice is to cover, about as it is accrued, the entire estimated annual depreciation in the charges that are made for the services they render and to set aside in a reserve the amounts so collected to be held therein until needed for renewals. This practice offers many advantages. Under it depreciation will be provided for during the period when it is accrued, and these provisions will, therefore, have to be borne by those who received the service and who should bear it. Under it, further, the investment will be kept intact, or approximately so, and the service adequate.

When depreciation is thus provided for by being collected from the customers on about the same basis or during the same period as that during which it is accrued, it is usually computed on either the so-called straight line or on the sinking fund basis. Under the straight line basis the value or the amount of the depreciation to be covered is divided by the useful life of the unit or the plant. The result thus obtained is the amount that should be set aside annually for depreciation. Thus, if the cost of a unit is \$1,000 and its life ten years, the annual charge for depreciation will be \$100.

Under the sinking fund basis it is assumed that the amounts thus collected and set aside for depreciation are invested at compound interest until needed for renewals, and that these amounts plus the interest accretions thereon will, at the end of the life of the unit, equal its depreciation. The difference between the sinking fund and the straight line method is that under the former method the amounts set aside for depreciation are used productively while in the latter case they are not supposed to be so used. The result of this difference in practice is that the amount that has to be collected from the customers is smaller under the sinking fund method than is the case under the straight line method. The difference in the amount thus collected annually under the two methods will depend upon the rate of interest that can be earned on the balance in the reserves.

Much has been said about the relative merits of the straight line and sinking fund methods of providing for depreciation. Without going into details in this matter it can be said that the sinking fund method implies a more efficient use of the reserves. It also means that, because of such use, the amounts the customers will have to contribute to cover depreciation is less than under the straight line method. The inference that can be drawn from these facts is that the

sinking fund method is the most economical and hence would also seem to be the best of the two methods from the point of view of public interests.

DEPRECIATION AND FAIR VALUE

This brings us to the question: How shall depreciation be treated in determining the fair value of public utilities? To correctly answer this question is exceedingly difficult and this for the reason that the answer must be drawn from facts and conditions that are not only complicated but often conflicting. It is also a question that is not easily separated from personal views and interests.

During the early years in the life of a plant few renewals are required and the expenditures for this purpose are therefore small. As the plant grows older, however, and the different classes of perishable property of which it is made up are reaching the end of their useful life and must be renewed, the renewal expenditures are gradually increasing. After some years a condition is reached under which the cost of such renewals remains somewhat more constant. At any rate, this is the case when the plant is properly maintained at all times and when the variations in the useful life of the different classes of the property is not out of the ordinary. When this state in the composite life of a plant is reached, or when its condition in this respect may thus be said to have become normal, its existing or service value, owing to the depreciation that has accrued in the property, is in a sense less than its cost new. This would seem to be true even when it renders as good or better service than it ever did. Differences of this kind between the cost-value-when-new and the cost-value-new-less-accrued-depreciation can not be made up by actual renewals if each unit of property is to be kept in service as long as it is efficient and if it is to be economically used in other respects. This difference between the cost new and the present value is represented by the depreciation that has accrued in its property, and its treatment in the valuation is the subject of many controversies. Some hold that in appraising the plant accrued depreciation should be deducted from the cost new; others again contend that this depreciation should not be so deducted.

In order to throw some light on these questions it appears necessary to know whether the plants are operating under normal conditions and to explain further the relations which obtain between the investor and the customer.

It is only to plants that are operating under normal conditions that standard rules and practices can be fully applied. Plants that are operating under abnormal conditions can not often be judged in the light

of ordinary standards. A plant so situated that it can not render reasonably adequate service, or which, when it charges all the service can bear, can not earn enough for what is ordinarily regarded as reasonable returns, has to be dealt with in the light of the peculiar conditions by which it is surrounded.

The relation between the investor and customer expressed in economic terms is that the investor furnishes a production good for the purpose of producing consumption goods or service on the condition that he is paid interest on his production good and that the production good itself is either returned to him unimpaired when no longer needed, or kept intact when the conditions are such that it must permanently remain in the business. In the utility field this means that the investor supplies the capital and the management and undertakes at all times to furnish adequate service. The customer, for the service he receives, undertakes to pay rates that are high enough to cover reasonable allowances for the cost of operation, depreciation and returns on the investment.

The value of the investment, as has been explained, is largely measured by the original cost of the property involved and by the cost of reproducing it. The depreciation of this property is represented by the waste and destruction to which it is subjected while used in the service. This waste is not easily measured but can usually be approximately determined from experience and observation.

Such waste or depreciation as this must, as a rule, be made good by the customer. This could hardly be otherwise since the property is used up in the service for the benefit of those who are served, and since the necessary capital cannot in the long run be had unless such wastes are made good. It is, in fact, as much a part of the cost of the service that has to be borne by the customers as any other item that should be included therein.

In order that such depreciation charges may be equitably distributed among the customers, it is necessary that they should be levied in about equal annual instalments during the period when the property they cover is used up in the service. If this is not done the cost of depreciation may have to be borne by many who were not using the service when the depreciation was accrued and who, therefore, should probably not be required to bear it. Since utilities furnish continuous instead of temporary service, the amounts thus collected for depreciation can not, as stated, safely be turned over to the investors but must be kept in the business. In other words, these amounts should be set aside in a reserve until needed for renewals. In this way both the capital of the investor and the service of the customers are best protected. Any other

course might not only deprive the public, in whole or in part, of one of its most indispensable necessities, but it might result in losses to the investors of all or a part of their property. How precarious the situation for the investors may be in such cases is illustrated by the fact that in condemnation cases, and sometimes also in rate cases, it is held that the cost-new-less-depreciation is the best evidence of the value. That adequate provisions be made for depreciation and that the reserves accumulated through such provisions be wisely and properly managed, is, therefore, of the greatest importance to both the public and the investor.

When the rates paid by the customer for the service cover all reasonable charges including depreciation, when the service is adequate and when the reserves for depreciation are properly kept and managed, the reciprocal obligations between the customers and the investors appear to have been lived up to in their most important aspects. Adequate service is inextricably bound up with adequate provisions and properly managed reserves for depreciation.

From all this it appears that the question of how depreciation is to be treated in the valuation depends very largely upon whether the depreciation that has taken place in the property has been covered in the charges for the service, and upon whether, if so covered, the amounts thus collected for depreciation have been placed in a reserve until needed for renewals or paid out to the stockholders in the form of dividends or in some other way, for their personal use and benefit.

This raises the question: What constitutes the turning over to the stockholders of the funds so collected for depreciation? Such funds are not so turned over when, after being collected by the utility, they are simply set aside in a reserve and properly employed until needed for renewals. It can not mean this, for, when so handled, the funds are in the control of the utility rather than of the investors therein. Under this method the funds are also used for the benefit of the customer, for they are used for the benefit of the customer when expended for renewals that are necessary to keep up the service, and when the balance above the current expenditures for this purpose, while awaiting further renewals, is so used as to earn interest for the reserve, which interest, when so earned, is applied in such a way as to reduce by that much the amount the customers have to bear for depreciation. As long as the funds are so used the rights of the investor in the assets of the plant have in no way been changed. The total investment is about the same as it was before any depreciation had set in and before any provisions had been made for it. The form of the investment, however, has changed somewhat. It has been shifted from the cost-new of the property to its cost-new-less-

depreciation plus the balance in the reserve. If this balance equals the accrued but unmatured depreciation in the plant, the investment may be said to have been kept intact in so far as depreciation is concerned. Such handling of the funds for accrued depreciation as that outlined in this paragraph is not only sound from a legal, but from an economic standpoint. It is in line with good practice.

In order that funds collected for depreciation shall have been turned over to the stockholders, it would seem necessary that these funds be released from the control of the plant and actually paid over to its stockholders for their private use. When such funds are so turned over the assets of the plant have by that much been diminished. The stockholder's equity, then, no longer consists of the cost new less depreciation plus the balance reserved for accrued depreciation, but of the cost new less depreciation only. If depreciation reserves make up a part of the assets which constitute the original investment it would also seem to follow that the withdrawal of such reserves would be tantamount to the withdrawal of original assets. It is of course true that such demands for funds for renewals may arise that the reserves so withdrawn may have to be paid back to the plant. Should this happen, and it frequently has happened, then it is, of course, necessary, in the interest of fair play, to take the amounts so restored into account in determining whether the funds in the reserve had been paid over to the stockholders.

When no provisions whatever in the rates have been made for depreciation, or when only such amounts for this purpose have been included in the expenses or rates as have actually been required for renewals, leaving accrued but unmatured depreciation unprovided for, no funds from this source can have been available either for credits to the reserve or for payment to the stockholders.

It appears from this that, in cases where the utilities have properly provided for depreciation, and where the amounts so provided have been used for necessary and proper renewals and for the accumulation of a reserve for the purpose of covering the accrued but unmatured depreciation of the property still in use, no reduction from the cost new, because of depreciation, should be made in determining the fair value for rate making and certain other purposes.

This conclusion would also seem to apply in cases where railroads and other public utilities have followed the policy of including in their operating expenses or costs upon which their rates are based, only such amounts for depreciation as were actually required for renewals. Under this method of dealing with depreciation no provisions can very well have been

made for accrued but unmatured depreciation. This practice was quite generally adhered to up to the time of the advent of the present systems of regulation. It has generally meant that no provisions whatever have been made for accrued but unmatured depreciation. In such cases, and they are numerous, there has manifestly not been any return of capital to the investor in the form of depreciation balances of any kind. Not only this, but the customers have so far also been relieved from providing more than a part of the depreciation that has taken place in the property. While the customers, as long as the service is good, and as long as they are not called upon to make up past-due depreciation charges, may not object to this practice, the investor is in an entirely different situation. For, under this practice, the investor will find that a part of his investment has been used up without being replaced by assets of any kind. Under such conditions, it would hardly seem fair to deduct accrued depreciation from the cost new in appraising the property.

The situation, however, may be different when the reserves for accrued depreciation which were furnished or provided by the customers have been paid out to the investors, and have been appropriated by them for their own private use. In such cases as this, a situation is created under which justice may demand that the accrued depreciation is deducted from the cost new and that the cost new less such accrued depreciation is used as the controlling evidence of value in the appraisals. Unless such reserves so withdrawn are in some way restored to the business for their proper purpose, it is hard to find any equitable ground for not deducting the accrued but unmatured depreciation from the cost new in the appraisals.

It is often argued and with some force that, as long as renewals are made when required, and as long as the service is adequate, the cost new of the property, regardless of how depreciation has been treated, should be the measure of its value. These arguments have in some instances been presented in such form that a more complete analysis of the same would require much more space than could be given to them herein. It may be said, however, that the above position as thus stated seems to be too sweeping and to demand certain modifications. When analyzed in the light of what has been said herein, for instance, it appears that the cost new can hardly be the most equitable measure of value in cases where full depreciation has been covered by the earnings, and where the balance above the cost of actual renewals, for the accrued but unmatured depreciation has been turned over to the investors.

It may be said, however, in this connection that such deductions of accrued depreciation from the cost

new in cases where the reserves for such accrued depreciation have thus been paid out to the stockholders is often questioned on legal grounds. It is argued, for instance, that the question of whether the rates in effect previously to the time of the advent of regulation were high enough to cover depreciation cannot be legally inquired into, since at that time there were no rules of law upon which the reasonableness of the rates could be determined. Without attempting to answer this argument it may be said that, if, as has been held, the statutes which provide for our present form of regulation are in substance declaratory of the common law, it would also seem that the obligations and rights which constitute the real basis for regulation date back much farther than to the present-day-system legislation upon this subject. The determination of whether in the past the rates have been high enough to cover depreciation is more likely to depend upon whether the facts that are necessary for such determination can be had, than upon whether such determination is within the law.

When the plants are taken over by the municipality, however, accrued depreciation is usually deducted from the cost new in determining the purchase price. In such cases the price is supposed to cover only the value at the time the property is taken over. It is further assumed that the purchaser becomes responsible for the renewals from that time on. Whether to so take the property at its present value is fair to those whose property is thus taken over by the municipality would seem to depend upon whether the rates up to that time have been high enough to cover depreciation. When the rates have been high enough for this purpose, the assets of the plant should equal its cost. When the rates have not covered depreciation the assets will fall short of this cost. If, in the latter case, the fair price is based upon the cost new less accrued depreciation, it must also follow that the investors are not likely to be fully reimbursed for their outlays on the plant.

The manner, however, in which the amounts provided for depreciation should be treated until required for renewals would in a large measure seem to depend upon whether the plants are temporary or permanent in their nature. When the life of the enterprise is short, or perhaps no longer than the life of the property used in the service, the amounts provided for depreciation may be regularly turned over to the investors. Under this practice the entire investment will necessarily have been so returned to the investor when the business terminates. In perpetual or more permanent enterprises, however, such as is the case for most public utilities, this method of handling the depreciation reserves is not regarded as safe. In such enterprises the

business does not terminate with the life of the property, but has to go on. In order to thus continue operation, it is necessary that the property be promptly renewed when worn out and that for these reasons the amount so provided for depreciation be kept on hand by the plants in order that they may be readily available for meeting the costs of such renewals.

When the amounts provided for depreciation have been turned over to the investors, it is obvious that they cannot also be used for the payment of renewals unless they are returned to the plant. Such returns to the plant, however, of such funds are apt to be connected with many uncertainties and delays. These uncertainties and delays have often been such as to make it necessary, in order to protect the service, to obtain funds for needed renewals from the sale of additional securities instead of from the proper source. It is because of facts of this kind and also because of the importance of maintaining the service that many states have deemed it necessary to require by law that the amounts provided for depreciation shall be held by the plants in a reserve until needed for renewals.

HOW BALANCE IN DEPRECIATION RESERVE MAY BE BEST USED

The discussion up to this point naturally suggests inquiries as to the most economical use that can be made of the balances held against accrued but unmatured depreciation. It was pointed out above that all utilities, if their property is to serve out its useful life and be used in the most economical way, have in this property a great deal of accrued but unmatured depreciation. If all the property had the same length of useful life and if all of it had been placed in the service at the same time, then the accrued depreciation would be small to begin with and would increase from year to year until the time the property would have to be renewed, at which time it would amount to as much as the entire cost of all of this property. In actual practice, however, the situation is different. Owing to the fact that some classes of property have a longer useful life than other classes, and owing to the further fact that the plants are, as a rule, built from time to time, the renewals, while small at first, are gradually growing greater until after a few years, in the larger plants at least, they become more evenly distributed. In the ordinary plant, however, there is never any complete cycle in the life of the property. In the very nature of things there cannot be. Nor is a state often, if ever, reached when, for municipal utilities, the annual renewals are even nearly the same. When the life of the different classes of property end in different years, however, it is plain that the fluctuations in the renewal

requirements are smaller than they would be if the life of all the property terminated at the same time.

Owing to the facts thus outlined in the preceding paragraph and when in addition to this depreciation has been correctly determined and fully provided for, there is, as long as conditions remain normal, a balance on hand in the depreciation reserve that about equals the accrued but unmatured depreciation in the plant. This is true even though after a few years the outlays for renewals over the different periods are about as great as the receipts for depreciation. While this balance fluctuates greatly even from one year to another and while little in the way of more definite knowledge regarding this balance is anywhere to be found in print, it is yet responsible for a great deal of speculation as to how it can be best and most justly employed. Some hold that this balance belongs to the stockholders and may be used by them as they see fit for their own benefit. Others hold that this balance should be used for the benefit of the customers. In line with this, it is urged by many that this balance should be used for the benefit of the reserve itself, in the manner outlined above in connection with the explanations of the sinking fund method of providing for depreciation, because when it is so used it materially reduces the annual charges for depreciation that must be borne by the customers. Others again hold that a better practice would be to devote this balance to the reduction of the value of the investment and thereby lower the amount upon which interest and profit must be earned. In other words, it is thought that this balance can be safely turned over to the investors as a repayment to them of an equal amount of their capital.

In order to make at least some of these questions as clear as possible it has been thought best to include in this part of the discussion several illustrations which are believed to be in point. To this end a hypothetical plant has been assumed with depreciable property, the cost new of which is placed at \$1,000,000. This property has been divided into eleven classes, the useful life of which vary as between each other, and range from five to fifteen years. The plant is also assumed to have been built in one continuous operation. The annual requirements to cover the accruing depreciation of this plant have been computed both on a 5 per cent sinking fund and on the straight line basis. It has been assumed further that the rate of depreciation of the property has been correctly estimated.

These assumptions for the hypothetical plant differ in several respects from what, in many cases at least, is known to be the situation in actual practice. Most utility plants, for instance, have a longer useful life than that given in the illustrations herein. The rate used in the sinking fund computations herein is

also at least 1 per cent higher than the rate that is mostly so used in actual practice. Utility plants are, for the most part, built in piecemeal rather than in one continuous operation, as has been assumed in these illustrations. Most plants also have a great deal of property, such as land, which is not subject to depreciation and which is often worth a considerable amount. These and other differences, however, that are found between the assumed plant herein and actual conditions are not on the whole of such nature as to materially affect the conclusions arrived at.

The illustrations referred to are in the form of tables. Without going into details it may be said that tables I and II show, among other things for each class of property and for the plant as a whole, the expected life, the total cost-value, the annual rate and the annual amount that should be provided for depreciation on the sinking fund as well as on the straight line basis. Table III which has been computed from the facts in Table II shows, for each of the fifteen years covered therein, the reserve for accrued depreciation at the beginning of the year, the addition to this balance in the reserve during the year through the regular annual charge for the depreciation, the total of these two items, the annual requirements for renewals, and the balance in the reserve at the end of the year.

As stated above, the property in the hypothetical plant has been classified in accordance with its useful life. The shortest life of any of these groups is five years while the longest life is fifteen years. Up to the fifth year no renewals were required. From this time on, the property in one or more of the groups had to be renewed each year. During the fifth year, for instance, the property in the five-year life group had to be renewed. At the close of the sixth year group B had also been renewed. During the seventh year group C was renewed; during the eighth year group D was renewed; during the ninth year group E was renewed; during the tenth year groups A and F were renewed; during the eleventh year group G was renewed; during the twelfth year groups B and G were renewed; during the thirteenth year group I was renewed; during the fourteenth year groups C and J were renewed; during the fifteenth year groups A and K were renewed. Two of the groups, the first and the eleventh, had thus been renewed during the fifteenth year, and in these there was therefore at the end of this year no accrued depreciation. The remaining groups, however, were in a more or less depreciated condition, the eighth group so much so that it would have to be renewed within a year. It is in this way that it is found that plants of this kind at all times have in them a great deal of accrued but unmatured depreciation. At the end of the fifteenth year the plant had also been in the service

TABLE I
HYPOTHETICAL PLANT—COST NEW \$1,000,000. SINKING FUND
METHOD—(5 PER CENT)

CLASS	LIFE	WEARING VALUE	ANNUAL PER CENT RESERVED ON 5 PER CENT BASIS	ANNUAL FUND
A	5	10,000	18.10	1,810
B	6	25,000	14.70	3,675
C	7	50,000	12.28	6,141
D	8	50,000	10.47	5,236
E	9	100,000	9.07	9,069
F	10	50,000	7.95	3,975
G	11	65,000	7.04	4,575
H	12	100,000	6.28	6,293
I	13	50,000	5.65	2,823
J	14	100,000	5.10	5,102
K	15	400,000	4.63	18,537
		1,000,000		67,226

$$\text{Average Rate } \frac{67,226}{1,000,000} = 6.723 \text{ per cent.}$$

$$\text{Average Life} = 11.4 \text{ years.}$$

TABLE II
HYPOTHETICAL PLANT—COST NEW \$1,000,000. STRAIGHT
LINE METHOD

CLASS	LIFE	WEARING VALUE	ANNUAL PER CENT OF DEPRECIATION	ANNUAL AMT. REQUIRED TO COVER DEPRECIATION
A	5	10,000	20.0	2,000
B	6	25,000	16.7	4,175
C	7	50,000	14.3	7,150
D	8	50,000	12.5	6,250
E	9	100,000	11.1	11,100
F	10	50,000	10.0	5,000
G	11	65,000	9.1	5,915
H	12	100,000	8.3	8,300
I	13	50,000	7.7	3,850
J	14	100,000	7.1	7,100
K	15	400,000	6.7	26,800
		1,000,000		87,640

$$\text{Average Rate } \frac{87,640}{1,000,000} = 8.764 \text{ per cent.}$$

$$\text{Composite Life } \$1,000,000 \div \$87,640 = 11.42 \text{ years.}$$

TABLE III

YEAR	RESERVE AT BEGINNING OF YEAR	CURRENT DEPRECIATION	TOTAL	RENEWAL REQUIREMENT	RESERVE AT END OF YEAR
1st	.....	\$87,640	\$87,640	.....	\$87,640
2d	\$87,640	87,640	175,280	.....	175,280
3d	175,280	87,640	262,920	.....	262,920
4th	262,920	87,640	350,560	.....	350,560
5th	350,560	87,640	438,200	10,000	428,200
6th	428,200	87,640	525,840	25,000	490,840
7th	490,840	87,640	578,480	50,000	528,480
8th	528,480	87,640	616,120	50,000	566,120
9th	566,120	87,640	653,760	100,000	553,760
10th	553,760	87,640	641,400	60,000	581,400
11th	581,400	87,640	669,040	65,000	604,040
12th	604,040	87,640	691,160	125,000	566,680
13th	566,680	87,640	654,320	50,000	604,320
14th	604,320	87,640	691,960	150,000	541,960
15th	541,960	87,640	629,600	410,000	219,600

long enough to have reached a state with respect to the renewals that may be regarded as normal. In other words, the conditions with respect to renewals that have obtained during the latter half of the fifteen-year period may also be expected to prevail for much of the time in the future.

In studying tables I and II many important facts may be noticed. The first of these to attract attention is the amounts that are annually required to cover the depreciation in the property. This amount is seen to be \$67,226 under the sinking fund and \$87,640 under the straight line method. The next thing to be noticed is the rate of this depreciation when thus computed upon the depreciable property alone, instead of upon the entire value of the plant. This rate amounts to about 6.72 per cent under the former and to about 8.76 per cent under the straight line method. Both the amount of depreciation and the rate of the same are relatively higher than the amount and rate that would have obtained had the plant been given a longer life. The life of the hypothetical plant herein has, for convenience in the computations, been given a comparatively short life. Its composite life, for instance, is only about 11.42 years.

Table III is even more important for the purposes herein than the two tables which have thus been touched upon. One reason for this is that it shows by years not only the amounts that were added to the reserve, but the withdrawals therefrom for renewals and the balance in the reserve at the end of the year. The accretions to the reserve were uniform. They amounted to as much one year as the other. The withdrawals from it for renewals, however, varied greatly from year to year. During the first four years no expenditures whatever were required for renewals. During the fifth year, however, they amounted to \$10,000. From this year on there was a gradual increase in these outlays until the end of the ninth year, when they suddenly climbed up to \$100,000. Having reached this point, however, the upward tendency was reversed until the twelfth year, when they amounted to \$125,000, and the fourteenth and fifteenth years, when they stood at \$150,000 and \$410,000, respectively. While these fluctuations in the renewal curve would have been leveled out to some extent had the plant grown up through gradual extensions during a longer period, they would by no means have been wiped out. To entirely eliminate such fluctuations seems to be out of the question except perhaps in very large plants, and even in these the best efforts in this direction are not always successful. These facts emphasize the necessity for most utilities to provide for depreciation about as it is accrued rather than as renewals are made,

in order to avoid serious changes in their expenses and net earnings.

As the cost of the renewals fluctuated greatly, it is only to be expected that this should also be true of the balances in the reserve at the end of each year. During the first four years, nothing was withdrawn from the reserve and the balance therefore increased from \$87,600 at the end of the first year to \$350,560 at the end of the fourth year. Up to the end of the eighth year, the accretions to the reserve exceeded the charges to it, and at this time the balance stood at about \$566,120. From this time on, up to the end of the fourteenth year, the balance therein did not vary very much from the figure just given. During the fifteenth year, however, owing to the heavy renewals which then had to be met, the balance fell to \$219,600. The reserves, as shown in the table, when taken as a whole, thus exceeded the renewals by considerable amounts. This is very largely due to the fact that no renewals were required during the first four years and to the further fact that they were below the normal up to about the ninth year. During the latter half of the period, however, the withdrawals from the reserve for renewals amounted to nearly one and one-half times as much as the accretions or credits to it. If the computations in Table III are continued for another period of fifteen years, it will be found that, during this period, the aggregate receipts in the reserve will amount to only about \$19,000 more than the aggregate disbursements therefrom for renewals, and that the balance in the reserve at the end of the thirtieth year will therefore be little or no greater than the balance at the end of the fifteenth year.

The question might here be raised whether the amount which in the table is annually allowed for depreciation is sufficient to cover current renewals in addition to the accrued but unmatured depreciation in the property. The answer to this must very largely depend upon whether the life of the property on which this allowance is based was correctly determined. Owing to the difficulties involved in determining the useful life of the property, it is hardly to be expected that this relation between accrued depreciation and the reserve should be exact. This, however, does not invalidate this method of handling depreciation. Inequalities of this kind are of such a nature that they will sooner or later come to the surface. When they thus appear, they can unquestionably be adjusted through necessary changes in the rates at which the reserve is accumulated. It is no more difficult to adjust inequalities of this kind than it is to adjust those inequalities which occur when worn-out units are replaced by units of either a higher or a lower price,

and the necessities for such and other similar adjustments are frequent.

In view of the facts that have thus been presented, it may at this point be asked whether any part or all of the balance in the depreciation reserve could with safety have been paid over to the investors as a return of that much of their investment. If conditions remained about normal, and if all the estimates upon which the balances rest are about correct, then it would seem that at least a part of this balance could have been so used without greatly endangering the service. Just what proportion of the balance could be safely devoted to this purpose is not so clear. To so pay over the entire amount reserved during the first four years during which no renewals were made would hardly seem safe, for had this been done there would have been no funds on hand with which to meet the renewals that had to be made during the fifth year. Nor would it have been good practice to devote the average yearly balance for the period to this purpose, since this balance considerably exceeds the actual balance for some of the years. Taking everything into consideration, it is probable that it would not have been wise to use a greater sum for such amortization than the balance on hand at the end of the fifteenth year, which balance amounted to \$219,600. Had this amount been so used, the result would have been that the entire balance in the reserve would have been wiped out and that the investment in the property would have been reduced from \$1,000,000 to \$780,400. If the plant had been a growing, instead of a static plant, it is likely that the relation of these figures to each other would have been slightly changed, but it is not probable that these changes would have been of such character as to permit a greater amount than the one named to be used in thus reducing a part of the investment.

While it thus appears that under normal conditions it may be safe to devote at least a part of the funds collected and reserved for depreciation to the amortization of the capital, it is not certain that it would be to the best interests of either the investors or the customers to follow this course. It is especially doubtful whether the customers would gain anything thereby. The main reason for this is that if the balances in the reserves are used for the purposes of reducing the capital, it will be necessary to collect or provide for depreciation on the straight line, instead of on the sinking fund basis, which in turn would result in increasing the charges to the customers. In other words what the customers would gain through lower interest charges would be offset in losses through higher charges for depreciation. That, in so far as the customers are concerned, the sinking fund method of providing for

TABLE IV

METHOD I					METHOD II				
I	II	III	IV	V	VI	VII	VIII	IX	X
Year	Fair Value	Return @ 8 per cent	Annual Allowance for Deprec.	Tot. Return and Deprec. Method I	Fair Value	Return @ 8 per cent	Annual Allowance for Deprec.	Tot. Return and Deprec. per Method II	Savings In Ann. Chge. for Return on Cap. and for Maint. of Capital by M. I. as against II
1st	1,000,000	80,000	67,226	147,226	1,000,000	80,000	87,640	167,640	20,414
2d	1,000,000	80,000	67,226	147,226	912,360	72,989	87,640	160,629	13,403
3d	1,000,000	80,000	67,226	147,226	824,720	65,978	87,640	153,618	6,392
4th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
5th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
6th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
7th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
8th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
9th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
10th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
11th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
12th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
13th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
14th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
15th	1,000,000	80,000	67,226	147,226	780,400	62,432	87,640	150,072	2,846
Total	15,000,000	1,200,000	1,008,390	2,208,390	12,101,880	968,151	1,314,600	2,282,751	74,361

depreciation is more economical, or results in lower charges, than the straight line method has been pointed out already. That this should be the case would also seem obvious, since under the sinking fund method the balances in the reserve are supposed to be so used as to bring in something in the way of returns, which returns, since they also go into the reserve, reduce by that much the amount that has to be borne by the customers. Under the straight line method, no accretions to the reserve can be had from this source. The result of this is to increase by that much the amounts which the customers will have to bear for depreciation.

In order to throw further light on whether the balances in the reserve account should be used productively for the benefit of this account, or whether these balances should be used for the purpose of reducing the investment, Table IV has been constructed. In this table, under method I, is shown the total cost to the customers of both the returns on the investment and the charges for depreciation when the latter are computed on the sinking fund basis. Under method II in this table is shown the total cost to the customers of both the returns on the investment when the investment is gradually reduced by \$219,600, which sum it was thought safe to take out of the reserve for this purpose, and of the charges for depreciation when these charges are computed on the straight line basis. The investment and depreciation charges used in these calculations are the same as those given above in tables I and II.

As Table IV contains the facts upon which much of

this part of the discussion is based, it should perhaps be more fully explained. The figures under method I therein are based on many conditions. Thus it has been assumed that the reserves will remain in the business and that they are invested partly in the plant, partly as working capital and partly in other securities. As no portion of this reserve has been paid out to the investors for the reduction of the capital, it is held that the fair value of the property is its cost new. Since the reserve is thus invested in a manner that is likely to yield the highest returns that can be obtained without greater risks, the depreciation allowance has been computed on a 5 per cent sinking fund basis. For interest and profits 8 per cent has been deemed a fair return. The total amount, under this method, that the customers will thus have to bear for interest and profits, as well as for depreciation, is summarized in column V.

The figures under method II in Table IV also depend on several conditions. In the first place, it has been assumed that \$219,600 is taken out of the reserve during the first three years and turned over to the investors and that this resulted in reducing by that much the amount of capital upon which interest and profit is allowed. That is, the cost new of the property, which was first placed at \$1,000,000 has been reduced by the above amount. For interest and profits, 8 per cent has been considered reasonable, and the depreciation allowances are computed upon the straight line basis. The total amounts which will have to be borne by the

customers in this case for the services they obtain are shown in column IX.

In connection with this matter, it may be noticed that in using \$219,600 from it for the reduction of the investment the balance in the reserve for all of the years was not entirely wiped out. In view of this fact it might perhaps be urged that these balances, though small, might still be productively employed for the reserve and that for this reason it is not entirely fair to make no allowance for this in computing the depreciation under method II. In answer to this it can be said that it is seldom either safe or economical to use the entire balance in the reserve in such a way that no portion of the funds therein are promptly available for emergencies and for other more or less temporary uses in the business. Depreciation is also of such nature that it cannot always be correctly estimated in advance. This is particularly true of such elements therein as inadequacy and obsolescence. It may therefore happen at almost any time that the requirements for actual renewals will exceed the estimates. As already pointed out, the balances in the reserve are subject to wide fluctuations from other causes. It also often happens in actual practice that readily available balances can be so used as to bring about considerable savings in the operating expenses or in the costs upon which the customers' rates are based. In view of these and other facts of this kind, it is not only likely to be bad practice, but in fact exceedingly hazardous as well as unfair to

the management, to reduce the available reserves to the last penny so to say.

The charges that will have to be borne by the customers when the balance in the reserve is used productively for the benefit of the reserve are given in column V. The charges that the customers must bear when the balance in the reserve is applied to the reduction of the capital are given in column IX. In comparing the results in the two cases, it is found that the interest and depreciation charges that must be borne by the customers are the greatest under the latter method. In fact, they exceed these charges under method I by about \$74,361 for the period.

These facts tend to confirm what has already been intimated, namely, that in so far as the customers are concerned, there seems to be nothing to gain by using the unexpended balance in the depreciation reserve for amortization purposes rather than productively in connection with the depreciation reserve. This would probably also be true even if under method II small amounts could be placed out at interest. In this connection it may be in place to repeat in substance something that has already been said. All virile and live enterprises are constantly in need of readily available funds for various more or less temporary uses. The ability to quickly obtain such funds often stands for material savings in more respects than one. For these and other reasons it may not be in line with the best policy to place too many restrictions upon the balance in the depreciation reserve.

A CRITICISM OF THEORETICAL DEPRECIATION

BY JAMES E. ALLISON

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Gentlemen:

We have just heard a very able discussion of the subject of depreciation, but Mr. Erickson's paper is a discussion rather than an analysis of the fundamentals. He takes it for granted that theoretical depreciation is an established truth. In this I must differ from him.

Led by the Wisconsin commission a number of the state commissions have accepted this idea of theoretical depreciation, but I am glad to be able to say that at least two of our commissions and those two among the ablest of them have repudiated the doctrine. I refer to the commissions of California and Massachusetts, and there is hope that others will eventually see the mistake of attempting to calculate the earning power of a utility by using the erroneous factor of composite remainder of life.

The United States Supreme Court has, I believe as stated in Mr. Goetz's paper, never clearly endorsed theoretical

depreciation, and has in at least two out of four of the important valuation cases inferentially condemned it.

By the error of theoretical depreciation I mean the practice in rate cases of making deduction from the allowed earning capital⁷ of the utility on account of an assumed lessening of value by reason of composite age. Whether the deduction is calculated by use of the straight line method or by the sinking fund method is not material to my argument.

Let us examine briefly the process by which a depreciated value (so called) is arrived at under the workings of theoretical depreciation.

First an investigation is made of the age (not the condition) of each item or class of items of equipment in the plant. This results in a composite age in the whole plant.

Next an estimate of the expected useful life of each item or class of items is made and this results in a composite estimated life of the whole plant.

Next the composite age is deducted from the composite estimated life and the result is a composite remainder of life expressed in a percentage of the full estimated composite life. This percentage is then applied to a cost of the depreciable property and the result is said to be the present value.

My first criticism of this process is not the most serious one, but it should appear very serious to men who as commissioners or public officials are charged with the duties of doing even handed justice between their fellow-citizens, the consumers, on one hand, and their no less fellow-citizens, the owners of the utility plant on the other hand. This criticism is the utter and absolute unreliability of the estimates of expected life of the items of equipment in any given utility plant. I am sorry to have to admit that through neglect or lack of thought or even on account of vanity in not honestly admitting ignorance of the unknowable, the engineers as a body have not sufficiently emphasized the extremely speculative character of estimates of life of major items of equipment in utility plants. The result has been that commissions, while mildly stating that estimated life may have some speculative elements, nevertheless act upon the assumption that there is sufficient reliability in the estimates to justify the determination of amounts vital to the justice which they are supposed to administer.

One of the superficially plausible but specious aspects of the estimated lives of equipment put forward by different engineers, is a certain apparent agreement of figures in the life tables of the different estimates. This very agreement is an evidence of the unreliability of the estimates as applied to any given plant.

Sometimes it is assumed that these lives are averages. This is not true, for with very few exceptions there have been no reliable life data collected. Owing to the development of the arts in utility equipment, replacements in the past have not as a rule been made in the same type of equipment as the removals, and generally speaking (there are exceptions of course) there has been little opportunity of compiling averages even if averages could be of any use after they were compiled.

The life of equipment depends considerably upon the degree of maintenance and the character of use given it in the individual plant to which it belongs, but even if we eliminated these as factors of variance, we find that the life of major equipment will depend mainly on the changes in the arts resulting in obsolescence and on the changes in the demand for service, resulting in inadequacy.

The life of the equipment is individual to the plant, and can only be estimated within such wide limits as to make the result in figures entirely unsuitable for use in the very responsible task of determining the earning power of property, serving the public.

So much for the reliability of the basic figures upon which theoretical depreciation rests. But even supposing them to be reliable let us examine their application.

As I have said: we have first the composite age of the property. This is deducted from the composite estimated life of the property, and the result is a per cent remainder

of composite life. This applied to a cost is used to determine the value or earning power of the physical plant.

To my mind a sufficient bar to the use of such a method is the fact that there is in reality no such thing as a composite life of a utility. The life of a going plant extends on indefinitely into the future with no determinable end, and to base a calculation of value upon the assumption of a remainder of life for the utility as a whole, is in the face of this fact almost an absurdity.

It should not need argument to show that, if renewals are made when necessary, a plant has no determinable life, and that, if there is to be a theoretical per cent deduction for age, this deduction would be infinitely small when applied to the really almost infinite expectation of the life of the utility.

This argument has sometimes been met by the advocates of theoretical depreciation with the statement that they are not considering renewals but only the existing physical property. But if the stand is taken that renewals are not to be considered, then the useful life of the plant is not the composite remainder of life as estimated, but its life will only extend to the time when the first vital part goes out. In other words, following theoretical depreciation to its logical conclusion very few plants would have a value much above scrap.

The fundamental mistake which has been made in applying theoretical depreciation is in assuming that an item in the plant and the whole plant are of a similar nature. It is true that the different items of equipment have an end. But the plant as a whole has not. If properly treated as to maintenance and replacement it pursues its course indefinitely, giving the required service, and in its normal state always representing the full amount of capital efficiently placed in the public service to produce it.

So far as age and the different parts go, they produce a normal condition of the plant as to replacement, which normal condition is the only kind of a plant possible of continuance and the only kind of a plant which the investor's money can permanently produce.

As the minds of the advocates of theoretical depreciation seem to confuse the nature of the item of equipment with the entirely different nature of the whole utility, let me illustrate by supposing, we will say, an engine of such a nature that not only repairs can be made but also obsolescence and inadequacy be counteracted piecemeal when required. I think it will have to be admitted that such an engine would last almost indefinitely and would not depreciate provided its parts were properly renewed. Utility plants of any size are exactly similar to such an engine, and so long as they are fully kept up do not depreciate in real value.

Much of the confusion of thought connected with the depreciation problem has been brought about by the question of charges and funds labeled by accountants depreciation funds or depreciation charges. They should be called replacement charges or replacement funds, for that should be their purpose.

When replacement is fully provided for, depreciation is counteracted, and does not exist, and so-called depreciation

charges should be made in rates with the purpose of counteracting or preventing depreciation by replacement.

The calculation of theoretical depreciation when applied to the future of a supposedly new plant today will produce as mentioned by Mr. Erickson a surplus or fund which cannot be used for replacement. It is, therefore, assumed that this fund having been allowed in the rate over and above a reasonable return does not belong to the owners of the utility plant, and if it is given to them, a like amount should be deducted from their investment; in short, the transaction should be treated as a part purchase of the plant by the consumer.

In ethics, perhaps, there can be no serious objections to this proceeding where it is confined to instances in the future where the charges which produce this surplus (wrongly called depreciation fund) shall have been specifically added to the rate paid by the consumer for the understood purpose of providing such a surplus or depreciation fund.

The whole transaction is entirely unnecessary and futile, but if a company wishes to sell a part of its plant to the public, and the public wishes to buy, the affair is, perhaps, in so far as the future plant is concerned, harmless, but has really nothing to do with the value of the plant except that the part purchase is made under the guise of a reduction in value.

I have said that there would be no great harm in such a procedure, if it were clearly understood that the resulting reduction of the earning power of the utility were compensated for to the investor by a fund expressly collected from the consumer for that purpose. But while this process might result in no injustice when properly applied to the future, it has become extremely dangerous to just administration when applied to the past or unregulated stage of the public utility.

In plain words, it is now often in effect assumed by commissions that the owners of a utility should have in the past set aside a fund out of their profits for the purpose of buying a part of the plant from themselves and giving it to the consumer.

The theory does not appear in this guise, but that is what it is nevertheless, and the so-called theoretical depreciation fund if it exists, as a surplus over the needs of replacement requirements, is nothing but a purchase fund unwittingly provided out of their legal profit by the owners of the plant and used by the commissions to buy a part of the plant for the consumer.

If the fund does not exist, so much the worse for the owner. The commissions take away a part of the plant anyway under the plea that the company should in the past have set

aside a fund to make the purchase for the consumer. This, of course, is said in other words and other terms are used, but the result is the same.

There are some who flatly claim the right of regulating today past profit through the device of theoretical depreciation. Let us see where such an assumption will lead. Past profits if legal were legally acquired property no matter whether we now think them excessive or not. Imagine giving any body of men power to take away legally acquired property because they do not approve of the way in which it was acquired. Yet this power is unwittingly assumed under the guise of theoretical depreciation when they compel a company to buy a part of its own property for the consumer out of the legally acquired profits of the past. Remember that in the past the consumer gave nothing for theoretical depreciation in his rate. Theoretical depreciation was unthought of either by utility owners or public officials, and the plain and sound view prevailed, that in a continuous business full replacements offset depreciation and the fact was recognized that, so long as a plant now and in the future is assured of, efficiently and continuously performing its functions, there is no lessening of value so far as plant is concerned.

Right here I wish to say that I should regret very much to be misunderstood as attributing to commissions the desire to unjustly cut down the earning capital of the utility under their power and protection. In attacking theoretical depreciation, I find its advocates almost as strong among the company's representatives, as among the commissions, while those who disapprove of it, and to my mind see its error, are also distributed between the commissions and the companies.

The problem has so many elusive aspects that honest disagreement will probably last for some time to come.

To some minds the statement that a plant which is not new cannot have a value as great as its cost, appeals as sound reasoning. They seem unable to grasp the truth that cost and abstract age do not measure value, and that to try to combine them as factors in a calculation of value, is like multiplying apples by potatoes with the expectation that the result will be peaches. Nor is it perceived that to seek to find value in the sense of exchange value is an error even before the method of such calculation is reached. In a rate case a determinable value does not exist until after the rates are made and the resultant earnings demonstrated, so that in taking abstract age and cost as factors to arrive at the value a double mistake is made, first, in the factors used; second, in the purpose of the calculation.

DISCUSSION

BY JOHN BAUER

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It seems to me that the relation of depreciation to fair value depends altogether on the basis of valuation that we decide to use. If the basis selected should be *exchange value*, as Mr. Allison seems to have assumed in his discussion, then, of course, there is no valid ground for deduction on account of depreciation. On that basis we may have a tremendous job in any case to establish the proper valuation; but when we have made the determination, however we may have reached it, we cannot very well depreciate it. This matter should be quite obvious.

In presenting his theory of depreciation, is Mr. Allison talking about exchange value? Does he consider that as the proper basis of valuation in rate cases? If he does, then we better close up shop; quit any further attempts at regulation; and let the companies charge such rates as they can under the theory of what the traffic will bear. Mr. Stevens last night assured us that he has a method worked out by which he could regulate rates on the basis of exchange value and still provide for a reduction of any existing high rates. Personally I agree with Mr. Eshleman: I don't see how that can be done. I have puzzled over this question considerably; of course, so has Mr. Stevens, and so has everybody else here. No one but Mr. Stevens, except perhaps also Mr. Allison, seems to comprehend how a reduction in rates may be effected under the exchange value theory. If Mr. Stevens has a method, it seems to me we ought to give him not fifteen minutes or half an hour, but all the time that he needs, to explain his magic. He would perform a great service in demonstrating how the circle of exchange value and rates may be squared.

If it is exchange value on which we are going to base rates, let us be clear about the matter. In that case there should be no further discussion of depreciation. Let me repeat: you cannot depreciate exchange value, nor could you reduce rates. But if that is not the basis that we wish, then let us make clear for ourselves what we do want. Whether or not we should allow for depreciation will depend upon the particular basis of valuation that we select.

We have heard the distinction again and again between actual cost and reproduction cost. While this distinction seems in general fairly clear, it is not as definite as the terminology implies. Suppose we were to say that it is actual, not reproduction cost, upon which we are going to base rates. What is actual cost? There are several distinct concepts. Do you mean the money or direct capital actually furnished by the security holders? Or cash or its equivalent put directly into property through the issue of securities? If that is what you mean by actual cost, it seems to me that again there would be no ground for any deduction on account of depreciation. If you can find by the inspection of past records, or if you can discover definitely in any way what the money actually was that was put into the business through the issue of securities, that ends the matter. The sum

would be a definite historical fact,—if you could find out what it is,—not subject to depreciation.

There are several other concepts of *actual cost* than the one just presented, and the speakers have not always made clear precisely what they meant. In general, we may look upon actual cost as a measure of sacrifice incurred by the security holders or investors of the business, or we may look upon the physical property used in the public service; the one view regards the investors as such, while the other considers the physical property. But, if we take simply the first view, namely, sacrifice of the investors, there are several concepts that should be carefully distinguished,—and with none of these as the basis would depreciation be a question in determining the valuation on which a return would be allowed. One of these sacrifice ideas has already been considered: the cash or equivalent put directly into the business through the issue of securities; under proper accounting this would be shown by the par value of the securities outstanding, plus or minus any actual premiums or discounts. A second sacrifice basis would include the above, together with all reinvestment of past earnings; this would normally be shown under proper accounting by the securities outstanding, plus or minus premiums and discounts, plus any surplus accumulated out of earnings. A third view would include also operating deficits or deficiency in return suffered by investors, and a fourth would provide as an offset to the sacrifice any excessive return realized by investors. Which of these possible ideas do we have in mind when we speak of sacrifice as the proper valuation on which a return should be based?

Let me repeat: with none of these actual cost concepts is there logical room for depreciation deduction. In any case, the result would be an historical matter which would have no possible connection with the physical condition of the property. Some of the speakers have seemed to imply the fourth basis as the cost that they mean—but I have not felt certain as to that,—namely, the funds put into the property through the issue of securities, plus investment of earnings, plus all operating deficits and deficiency in reasonable return on investment, minus all excessive returns. We may call this for the sake of definiteness the “net sacrifice to investors” or simply the “net sacrifice” basis. This view is very attractive. It squares with an ideal relation between the public and the investors; that the latter are entitled to a fair return and no more; if they get less, the deficiency would be added to the investment, and if more, the excess would be deducted. In any case, the proper valuation would require an analysis of the company's records as to the securities issued and the returns realized by investors. The primary determination would be the money or equivalent directly put into the business through the issue of securities. The secondary calculation would require a minute analysis of the entire operating history of the company, from its

beginning to the time of the rate proceedings. A fair rate of return would have to be assumed, and on the basis of this rate, any deficiency in return realized by investors would have to be added to the primary valuation and any excessive return would have to be deducted. Compound interest allowance would have to be made in the calculation,—both in case of additions to and subtractions from the primary figure.

As stated before, the net sacrifice theory is attractive, but we should be clear as to its full significance when we urge its adoption. As to depreciation, of course, there would be no room for any deduction. Undoubtedly in determining the desirable basis of valuation we should have chief regard to justice and broad economic considerations. In a sense, the net sacrifice presents a high ideal of justice, but I doubt very much whether it offers a reasonable way to proceed with existing investments. If investors had known all along that the method would be used, it would, of course, be fair and satisfactory. But they have not known, and in many cases grave injustice would be inflicted if it were to be adopted for the valuation of existing properties. In many cases, the deficiency in return has been so great that the net sacrifice would present a figure on which the company could never earn a reasonable return. In such instances the business was ill-conceived, and the investors never can get a full return on their entire sacrifice; they cannot avoid loss, however high the rates may be placed. The addition to the primary investment would be of no use in making good past losses incurred in behalf of the public. There would be plenty of instances, however, where past deficiencies could be made good through future rates, and where the addition to the primary investment would therefore be greatly advantageous to the investors.

In judging the practicability of the method, we must consider what can be done or reasonably should be done, if there have been excessive returns in the past. In such cases, and they are numerous, would it be feasible to make deductions from the direct investment on account of past earnings? If we were to do so, and were to follow the method consistently throughout, clearly in many cases the investment would be reduced to a nominal figure or would be wiped out altogether. In extreme cases, and they probably would not form a negligible number, not only would the existing investment be wiped out, but the stockholders would find themselves personally indebted to the public. Could the public collect the debt? Considering our social policies in the past and our fundamental views of law, would it be practical to deduct from the direct investment even if the result would still leave a nominal amount for future return? Would it be possible or expedient to make any deductions from a primary valuation on account of past earnings which were due to rates that were legally permitted to exist?

We may argue, of course, that at any time all the investors were entitled to receive was a fair return on the investment placed at the service of the public. We have had a right to regulate; if they have received a fair return, then any excess was more than the public should have been charged, and the

amount should be deducted from the investment. This logic is rigorous; the difficulty is, while, of course, we have had the right to regulate, the right has not been so clearly defined as assumed, and the fact remains, we have not exercised it. Could investors have reasonably expected under the laws as they have been interpreted, that excess returns would be deducted from their investment? If so, then they had their eyes open, and the deduction should be made. But, no one would seriously urge that any such view has been held by any considerable proportion of the public; certainly not by our lawmaking bodies and the courts. No American legislature would now consent to such a policy; if any did, an enactment embodying the principle would certainly be annulled by the courts.

Personally, I should consider the net sacrifice basis unworkable as to existing investments, but it may very well be applied to future investments. But before considering future policy, I should like to present still another actual cost concept, which I believe is the only one that may be practically applied to existing investments, and which does bring up the question of deduction for depreciation. With this concept, we turn from the securities outstanding or the investors as such, and view simply the property in service. This property may be inventoried and appraised on the basis of costs or prices at the time of installation. The result would be the actual cost of the property, instead of the reproduction cost, which has been extensively considered in the Conference. This is not an historical view; it would not regard the funds provided by security holders nor the returns that have been realized during the life of the business. It would consider only the property in service at the time of the valuation and would provide for appraisement at prices when the particular units of property were installed. Then after the appraisal is completed, based on installation costs, the question would then arise whether any deduction should be made on account of the physical condition of the property. Should any deduction be made on account of depreciation?

As a further basis of valuation, we may take reproduction cost. Let me briefly point out, without extensive discussion, that this method is more directly comparable to the actual cost just presented, *i.e.*, appraisal of property at installation prices, than to the various investors' sacrifice concepts previously reviewed. Reproduction cost is an appraisal concept, regarding the property in service, and not a sacrifice idea with the view centered on the investors in the business. It would require a physical appraisal of the property in service, placing the valuation at present prices of labor and materials. After the primary valuation is completed, then the question would come up, just as under the installation cost method, whether any deductions should be made on account of the physical state of the property.

From the general valuation concepts that I have briefly outlined, it should be clear that the question of depreciation logically arises only in case of physical appraisal, when we disregard the securities outstanding or the investors, and look upon the property itself. It seems to me that practically we shall be compelled to adopt an appraisal method. Any of the

investors' sacrifice concepts would be unworkable, partly for the reasons already suggested and partly because the records in most cases are incomplete, so that the investment could not be determined except as a more or less justifiable guess. At any rate, here we are with the various possible bases of valuation; the question before us is, which shall we select as the most reasonable? For the future, there is probably little difference of opinion or we could come to an agreement. Any one of the invention sacrifice theories might be used. I should prefer the first concept presented above, the funds put into the business through the issue of securities. We could then look directly to the securities, their salary to show the investment. The regulation of security issues would insure that none would be made except for actual funds put into the business. My notion would be that only such returns should be allowed to investors as is clearly stipulated on the securities issued, with except possibly an addition as bonus for efficiency of service. Any excess earnings of the business should go to the state or municipality in the form of a franchise tax. If this policy were definitely fixed, there could be no possible injustice; investors would know what risks they were taking; the rate of return on which the securities could be issued would be determined accordingly; the determination of investment and return could be made easily an automatic matter, based on accounting control of the companies.

For the future such a policy seems to me essential if we are going to get anywhere with regulation. It would provide for definite and automatic control, and, if the risks were made clear to the investors, it would be just to them. The difficulty is as to existing properties: how shall we treat them? Frankly here we face a confusion. It seems to me, again, if we are going to get anywhere with regulation in the future, we should work out a reasonable valuation policy and apply it throughout to all companies as to their existing properties. I believe that as soon as practicable we should place a valuation upon every existing investment in line with the policy that we may select, and then for the future allow a fair return on the amount and no more, and, as already stated, allow a fair return also on all additional investments and no more. If this were done, regulation of return would become a definite and automatic matter, and we should be free from the time-consuming, costly, irritating and unsatisfactory proceeding in present rate cases. I should like to continue with the details of this scheme, but cannot for lack of time. I merely present the outline of the plan of regulation which seems to me desirable for the future, which would really make public utilities the public agencies that we consider them to be.

The practical question, then, that we face is, what reasonable basis of valuation shall we adopt for the valuation of existing properties? This is not a question of establishing exchange value, but one of formulating a broad public policy which is fair to investors and at the same time provides the definite control of utilities that we desire. This is properly a legislative matter, as Mr. Anderson pointed out in his paper, and undoubtedly, if a reasonable policy were presented by a legislature, it would receive judicial sanction. One of the

chief considerations of the policy should be justice to investors, but we should look primarily to broad social and not to narrow personal justice. If we are guided by the narrower individual view, we are bound to defeat more or less the reasonable social claims for definite control. We should adopt a policy that is sensible, which will not permit endless discussion of detail, particularly which is definite and can be applied in the same way to all cases.

It seems to me that we must give up as unworkable the standards set by the Supreme Court of the United States in *Smythe vs. Ames*; that in any case we must consider the actual cost of the property, the reproduction cost, the par and market value of securities, etc. This means, and there seems to be some opinion here at the Conference in favor of this view, that the basis of valuation employed should be determined according to the circumstances of each case. Now, I believe, that if we look at this proposition squarely, we must admit that it will not work. To get anywhere in practice we must lay down rules that can be reasonably understood. The principal difficulty now is, we have not laid down definite rules; we have allowed ourselves to drift and we are still drifting. Of course, a certain amount of drifting is necessary until one gets his bearings. I take it, however, that the purpose of this Conference is chiefly for the purpose of getting our bearings and of determining the best method to proceed. We are not bound by technical court rules; we are free to consider what is best to do. The absence of clear rules of valuation accounts largely for the efforts of the company in any case to urge as many different elements of value as possible, for the interminable discussion, the dragging out of the hearings, the great expense, and the many unsatisfactory decisions. If we really expect to regulate, we must have rules which moderately intelligent men can understand and which can be reasonably applied, without inordinate time and expense attached to the valuation proceeding.

In deciding upon a clear rule to apply to existing investments, there are the various concepts that I have reviewed, and there are others. As already brought out, the investors' sacrifice concepts are attractive but unworkable, partly because of the difficulty in most cases to determine the amount of the sacrifice, and partly because of the extreme positions to which their logical application leads. Still, so far as possible, it seems to me we should make the method adopted for existing investments as consistent as possible with the rule applied to future investments. For practical considerations, it seems to me we are bound to adopt an appraisal idea, looking upon the existing property in any case, and disregarding the securities outstanding or the sacrifice of the investors. If we do decide upon appraisal, we face two workable alternatives, actual, or more precisely, installation cost, and reproduction cost; appraisal at prices when the different major units of the property were installed, or at present prevailing prices. Which basis is the more reasonable?

Frankly, for the sake of obtaining definite control for the future, I should be willing to accept reproduction cost. Still, it seems to me, installation cost would be the more

reasonable. It would conform more nearly to the rule that we all agree should be applied to future investments. Further, if proper accounting has been followed in any case, the installation cost appraisal would correspond with the book cost shown by the accounts of the company. In the average case, it seems to me, the policy would measure up with our ideals of justice, giving the investors credit for what they fairly deserve or could reasonably expect. But, of course, in many cases there would be past losses that would not be recouped,—but also there would be many cases of past excessive profits which would not be counted against the valuation. We should draw a curtain on the past so far as personal sacrifice and return are concerned. The policy is for the future, with still reasonable consideration for vested interests. On the average installation cost would not only come up fairly to our ideals of general justice, but at the same time would conform well to our measure of future investment. Along broad social lines, the method seems to me the one that is just and expedient, and the one to be adopted.

In order to make the method easily workable, it seems to me that it could well be applied on the basis of averages. Minute inventories would not be necessary, and exact prices at the time each unit of plant was installed would not need to be used. For physical plant, we might very well determine average unit prices for the past ten years, and apply them throughout to the inventories in each case. This procedure would probably give as reliable results as any hair splitting determination. In the case of land, however, there usually would be no difficulty in determining the exact purchase price, and that could be adopted. But, if it could not be found, again averages could be used. I make this merely as a suggestion; I cannot consider it further for lack of time.

Now, when we have the installation cost, we face the question of policy whether to deduct from the gross valuation for depreciation, on account of wear and tear of the property in service? The answer should again be based on broad social considerations, and, it seems to me, should not be complicated with the special question whether provision in operating expenses had been made by the company in the past for depreciation, or with other such technical considerations which Mr. Allison brought out in his discussion. What is the reasonable general rule to apply? That is the question; let us forget what individual companies did or did not do. Whether a particular concern included depreciation charges among operating expenses in the past and set up a proper depreciation reserve, it seems to me is merely an incidental matter, having nothing to do with the advisability of whether we should take account of the physical state of plant in making a present appraisal. Certainly in very few cases did past provision for depreciation have any connection with the profitableness of the business,—with the ability to make the provision. Only in an exceptional case were adequate depreciation charges made, whatever the profitableness of the undertaking. The average company would probably have been able to make the charges and still pay a reasonable return on actual investment,—but they neglected the

matter, and either paid out unduly large profits or put the excess earnings into the property. If the former, then where is the clear demand of justice not to make a deduction for present depreciation? If the latter, then, clearly, the amount of property shown by the appraisal will be so much greater because of the reinvestment of earnings, and again where is the requirement of justice for not deducting from the valuation the existing depreciation?

So much briefly for mere technical considerations. We must remember all the time, that in the past we have allowed the companies to charge such rates as they could and to make all the profits they could, without regard to cost or sacrifice on the part of investors. But all the time we had a right to restrict the return to a fair rate on actual investment. For the future we wish to regulate, and to do so as definitely as possible. Now, what is fair in the matter? Certainly, we may reasonably suppose that without restrictions on rates in the past, the average company was able to earn a fair return on actual sacrifice, and make full provision for maintenance of property, including depreciation. If so, then are we not justified to disregard any further considerations of past sacrifice and return, or the question whether actual depreciation charges had been made and a reserve set up? And in making a physical appraisal, should we not make reasonable adjustments for the present physical state of the property?

That we should make an adjustment in the appraisal on account of depreciation thus seems to me beyond question, but it is a question of policy to be properly determined by legislative enactment. If we should not provide for the adjustment, the chief difficulty would be, the valuation in any case might be greatly inflated by the inclusion of obsolete, old, wornout property, or more correctly, *junk*. Where would you draw the line between property in service and property retired? Would you, for example, allow the Third Avenue Railway Company in New York City to include its horse cars at installation cost? The cars are still in use: they cost possibly \$5,000 each. What is reasonable? If we make allowance for depreciation, then it would not matter in any case what was included in the inventory; if junk was added in the primary valuation, it would again be fully deducted on account of accrued depreciation.

Everything considered, then, the reasonable thing to do, it seems to me, would be to take installation cost as the basis of valuing existing properties, with deduction for depreciation. For future investments, the money actually put into the business through the issue of securities would probably furnish the best basis. In conclusion, let me suggest again: what we should work for is definite control for the future, so that investors will get a definite return and no more upon a fixed valuation,—so that regulation may be determined chiefly through accounting control of the companies. Definiteness for the future is the thing that I should emphasize above everything else. The particular basis of valuation should be determined according to the reasonable requirements of the future.

MAKING DEPRECIATION DISCUSSION UNDERSTOOD

BY HARRY BARKER

Editor, Engineering News

So many meanings of the term "depreciation" have sprung up, as Mr. Stearns has pointed out, that most discussions of depreciation get all tangled up in a maze of misunderstandings. If we could only standardize our nomenclature of discussion and agree on certain restrictions in the use of words, a great step would be taken. We could all understand what each was talking about and we could know that we were focusing our attention on identical ideas.

In my work I have found it convenient to group the several meanings given to the term "depreciation" into two general classes: (a) Losses in value of physical property, and (b) sums secured from earnings to offset loss in value of property.

The first group of definitions is split into: (1) aggregate actual or estimated loss in value from all causes; (2) loss in value due to wear- and age-deterioration as distinguished from the loss of value from liability of obsolescence or inadequacy; (3) the loss in value due to loss of ability to render full service or due to decreased efficiency.

The second group of definitions was found to cover: (4) an annual accounting figure representing the depreciation for the year, or any other given period, deducted from gross earnings in computing probable true net earnings; (5) an annual sum used in making up the amount of necessary income to be secured by the rates. This last is often an annuity to be set aside out of earnings to help create a reserve which will equal the cost of the several items of plant when they are retired from service, and which will pay for the renewals to the extent of the cost of the items retired. It might well be instead a direct repayment, out of earnings, of investment equal to the annual loss in value of property due to depreciation. There is a final observable definition of "depreciation" as (6) various aggregates of the annual sums secured from time to time to compensate for loss in value through depreciation.

The multiplicity of ideas thus hinging on the one word "depreciation" explains the extreme confusion which has arisen and shows the need of reform. Language is not so impoverished that it is necessary to use an important technical word in so many senses.

The first detailed definition noted—as the aggregate loss in value from wear-deterioration, inadequacy, supercession, antiquation, delapidation, etc.—is probably the most used and the original one. This can well be adhered to and a few available terms employed to carry the other ideas. The

second detailed definition makes a most useful distinction, the idea of which should be preserved. But the idea is more definitely indicated by "wear-deterioration," "age-deterioration," or "wear- and age-deterioration" according to the shade of meaning desired.

The third definition—loss in value due to diminished power to function or due to decreased efficiency—has no real place in depreciation discussions—for mere ability to render the original service does not indicate lack of depreciation (definition No. 1) and percentage of service ability (which is not the "serviceability" of the dictionary) does not measure value. (It indicates relative value only when the duration of that percentage of service ability or efficiency is considered: If one machine can yield the same service for 10 years and a second machine can yield the same service for 20 years their values are not the same.) Instead of speaking of this loss of service ability as "depreciation," it would be better to call it "service-ability drop" or something else. If there were not so many definitions in the field needing weeding out, this abbreviation to "depreciation" would be excusable; but because of the confusion induced the longer phrase should be reverted to. Similarly in the case of the fourth definition, it is advisable to say "depreciation allowance" for, between speed of speech and accuracy of expression, there should be no question of choice.

Definition five conveniently reduces to "retirement allowance"; and for further simplicity I have coined the term "retirance" which has been found quite understandable and extremely convenient.

The first and fifth definitions are, perhaps, the ones most used, so that it would be a great advance to agree to speak of "depreciation" as the actual lost value and "retirance" as one year's part of the compensation. Therefore, retirance is a definite factor in rates and is in nature a repayment of invested capital. "Unit-retirance" may be spoken of as a subdivision of retirance as it has been apportioned over rates. "Aggregate-retirance" is obvious. "Wear-retirance," "age-retirance," "obsolescence-retirance," etc., become useful special terms which can be accurately employed.

By imposing on ourselves such a restriction in the employment of the terms depreciation, wear-deterioration, depreciation-allowance, retirance, etc., discussion is not appreciably encumbered and a fundamental cause of exasperating confusion is removed.

OPEN DISCUSSION

ALLYN A. YOUNG, *Professor of Economics, Cornell University:*

It seems to me that the question is not a question of accounting; it is not a question, even, of engineering: it is a question of fact, and primarily of economic fact. I do not agree with Mr. Allison in his use of the term "theoretical depreciation" as a synonym for accrued depreciation. I believe that accrued depreciation is real depreciation. A utility whose plant is on the aggregate half wornout or one third wornout is not the same thing as a utility whose plant is entirely new.

I believe that a new utility is worth more in the market for purchase than a utility that is partly wornout. I think that it is worth more in condemnation proceedings than a utility which is partly wornout. And this brings me to a consideration of one point advanced by my friend Dr. Bauer. In the case of valuation for a condemnation sale, we may properly assume that the proprietors of utilities have known, in a general way, what the rules of the game were. They have been informed by court decisions and by established practice that plants bought under condemnation sale are usually bought at their estimated market value; and, generally speaking, that means a depreciated physical value.

I believe the risk of a possible forced sale to the public at a depreciated value is one of the real risks which a public plant encounters. It may, for example, be one of the things to be taken into account in the quality and price of the service. I am not so sure about the matter of depreciation by regulation.

It makes no difference what valuation you take for the future if we give a fair return upon that valuation and require an actual investment—sufficiently large to support that valuation; but this does not necessarily mean that in so doing we have to break sharply with the past and, whether we do justice or injustice in particular cases, to insist upon retroactively enforcing the same rules that we are making for the future. I see no particular concrete difficulty in the way of requiring any plant, from this time on, to keep all adequate depreciation charges on whatever basis we please; while at the same time admitting that since it has not kept such charges in the past, and since as from the point of view of its owners, and from the point of view of the utility world and the business world in general, as well as from the points of view of law and of past accounting practice, such charges have not been considered necessary, we have no right to assume that its past practice should have been like our requirements for the future.

Now, to depreciate a property on account of accrued depreciation in the valuation for regulation, for rate-control, is to assume, of course, that the company should have accumulated a reserve on account of accrued depreciation. We know perfectly well that such was not ordinary business practice in the case of companies with large investments. We know perfectly well that such companies could see no reason why they should attempt to maintain what I should

call the *market value of their capital* intact, by depreciation charges. We also know that it is and has been considered entirely adequate business practice to set aside such allowances for depreciation as would adequately provide for replacement.

I agree entirely with Mr. Erickson's paper, so far as it touches the treatment of the accrued depreciation of railroad properties. I believe that that matter has been adequately taken care of in the past by most railroads—not on all—by charges to operating expenses on account of maintenance. But I am inclined to think that there is a somewhat larger likeness than Mr. Erickson seemed to imply between railroads and other public service companies with large and varied properties. I have never quite understood the logic of the rule of the Wisconsin Commission that accrued depreciation must be charged in order properly to provide for replacement, coupled, as it was, with the actual enforcement in practice of a rule that the depreciation charges should be much more than adequate to provide for replacement, and that by the whole amount of that permanent reserve of which Mr. Erickson has spoken. In general, then, although I do not agree with my friend Allison's use of the phrase "theoretical depreciation," I am inclined to agree with his general conclusions.

ROBERT L. HALE, *Lecturer in Economics, Columbia University:*

I want to enlarge on the point brought out by Dr. Bauer. I think he is quite right in saying we must draw a curtain between the past and the future. I think we need a little more definite statement of just what we will do in the future.

It seems to me what you have to do is to serve notice now that any excessive returns between now and the next time we regulate any company, shall be deducted from the valuation, unless they are reinvested in the plant, in which case the valuation should remain as before. The extra investment would then doubtless lessen the operating cost, and the company would have to reduce the rate in order to avoid a continuance of the excessive return with its accompanying deduction from valuation. Each deduction from valuation would obviously lessen the amount the consumers must contribute towards fair return. If instead of reducing its rate it continued earning excess returns between now and 1920 and declared them out as dividends, it seems entirely proper that they should continue to be deducted even though the result in 1920 was such that there is no longer any valuation left. If the valuation was thus reduced by 1920 not merely to zero but to a minus quantity (say \$10,000) then it simply indicates that the public has paid the company not only the entire expense of its plant but \$10,000 additional; instead of the public owing the company anything on its investment, the company now owes the public a fair return on \$10,000. This should be collected from the stockholders. With publicity of accounts, the stockholders could have known that their excess dividends were repayments of their

investment and more, and would have no excuse for being unprepared to meet their debt to the public.

This all presupposes that you announce definitely now what shall constitute a fair return in the future. The basis for any such return should be the actual future investment, plus some arbitrary figure representing the investment of each company existing at the time the statute is passed which announces the future policy—and it will require a statute. The arbitrary amount fixed for existing companies cannot be entirely satisfactory to all; for some compromise may be necessary by reason of the confused situation referred to by Mr. Bauer. But if we do the best we can with the past, then start out with an actual cost basis for the future, we shall read fairly satisfactory results. But to prevent the future from developing into another confused past before we get around to regulating a company again, it will be necessary to hold it strictly accountable to the public for any excess profits earned in the meantime.

A. M. SAKOLSKI, *Secretary Valuation Committee, The Delaware and Hudson Company, Albany, N. Y.:*

Mr. Bauer would limit profits, future profits, as he says, to a reasonable return: has he any scheme for preventing losses to investors on the same grounds? Now, if you have a limit, upward, doesn't it logically follow that you should place a limit in the opposite direction and guarantee investors who take the greatest risks against losses or complete losses? Is it not a principle of agency that as long as the agent is limited in the amount of his compensation, he is also to be recouped for his losses incurred in his capacity as agent? Has Mr. Bauer any scheme to recoup all investors, both bond and stockholders, in public utilities for unusual losses?

It is true that a class of investors, *viz.*: bondholders and preferred stockholders are generally limited to a fixed rate of return, but as an offset they demand special preference both as to security and as to the distribution of earnings. But no sane person would think of financing a public utility by bond issues alone; and if you issue ordinary stock, I mean common stock, and limit the rate of return thereon, such a rate would be so much above the ordinary rate expected by the largest class of investors, that Mr. Bauer's scheme, would have little, if any practical effect.

PROFESSOR BAUER:

My answer is twofold. (1) If the investment is reasonably conceived and properly managed, the stipulated return could usually be earned. (2) But, as to future investment, if the policy followed is clearly determined, the risk involved would be taken into consideration in the rate of return upon which securities may be issued. If it is clearly known that the company may pay a given return to investors and no more, but that the business must earn the amount, then clearly the interest or dividend basis on which bonds or stocks can be issued will be at a higher rate than if an absolute guarantee were given that the stated return will be paid, supported by the taxing power of the community. I am not certain but that an absolute guarantee would furnish the wiser policy. But so long as the investors know what

the policy is, there can be no injustice. It is clearness and definiteness that I have been urging. As to Mr. Hale's suggestion, that periodically the investment figures might be revised to take account of excess earnings, it seems to me that would be an unworkable scheme. The return should be restricted each year to a definite return on the then existing investment. The machinery to effect such control could be easily provided.

MORTON G. LLOYD, *Technical Editor, Electrical Review and Western Electrician, Chicago:*

The point involved in the last question, and also the proposal of Mr. Hale, not only can be carried out, but are being carried out already, under the traction ordinances of two of our American cities. In Kansas City, Mo., under the ordinance adopted July 7, 1914, the return to stockholders is limited to 6 per cent until the excess above that amount has been used to amortize all of the intangible elements in the valuation. Under the scheme in operation in Cleveland, Ohio, all returns in excess of 6 per cent on an agreed valuation are put in a reserve fund, and when this exceeds a stipulated amount, a reduction in fare is made. If the reserve becomes reduced below a stipulated minimum, an increase in fare goes into effect.

OSCAR F. GAYTON, *Valuation Supervisor, Department of Public Service, Chicago, Ill.:*

I think, in Professor Hale's arrangement, that he would produce a very poor class of managers, and from such a point of view his paternal scheme is in error because any scheme that does not provide for the rewarding of efficiency is fundamentally wrong.

In regard to the classes of depreciation cited by Mr. Goetz, the reason for allowing a greater percentage of depreciation in profit and loss accounts than one does in valuation cases, is because, in the valuation cases, you are dealing with something that is past, something that is real and concise; and in the accounts you are dealing with the future, and you have to allow a great deal for contingent depreciation. In waterworks property valuation the annual allowance of depreciation on the plant taken as a whole is never more than a fraction of 1 per cent, probably about six tenths; whereas, in accounting, in providing for the future, it is always customary to allow 1 per cent, to include the various phases of depreciation, physical, functional and contingent.

In regard to Mr. Allison's remarks, I believe that his replacement fund is the same thing as a depreciation fund, that it is allowed for in the same manner and amounts to the same thing.

L. K. FRANK, *Accountant, N. Y. Telephone Co., New York City:*

I would like to point out that the depreciation reserve is an economic concept and that the depreciation reserve is required to protect the integrity of the capital investment. If a utility is permitted to pay dividends only to the extent of a fair return on the capital invested, a depreciation reserve must be provided which will insure the replacement of the

capital consumed in the business, since investors must have their capital returned to them in the form of higher dividends or else replaced through a depreciation reserve.

In cases where no reserve has been provided, utilities have gone into bankruptcy or out of business or rates have been made unduly burdensome to provide for past neglect regarding depreciation reserve.

Furthermore, I would like to emphasize the fact that the depreciation reserve is for the replacement of capital, not of plant. That is, the reserve should be accrued so that when \$100 of plant goes out of service, there will be \$100 in the reserve to replace that capital. If the cost of replacing the plant, which originally cost \$100, is now \$150, the additional \$50 represents new capital investment to be obtained from stockholders. If this is not done, the subscribers or users of the public utilities are made to contribute \$50 as an outright gift to the stockholders.

The railroads have proceeded on the theory that the users pay for the replacement of plant instead of capital and many engineers are in favor of it; but from an economic standpoint it must be recognized that the depreciation reserve is for the replacement of capital and not for the replacement of plant.

By recognizing the economic character of the depreciation reserve and following these principles, two objects are attained: first, the cost of replacing the capital consumed in the business is spread over past, present and future users and included in the operating costs; and secondly, the obligation to continue the business is divided equitably between the stockholders and the users, both of whom must be made to meet their obligations by regulation.

FRANK E. SEIDMAN, *Accountant, Public Service Commission, New York:*

It seems to me that there is one point that Dr. Bauer ought to bring out in connection with the future policy he has outlined, as to deductions for depreciation. As I understand Dr. Bauer's theory, he advocates for the future an allowance of a return on the actual dollars put into the business by the investors. He did not say, however, whether or not he would deduct from this investment the amounts contributed by consumers on account of depreciation. I would heartily endorse Dr. Bauer's method if it were qualified to the extent that the amount of depreciation contributed by the consumers be deducted from original investment. If this contribution for depreciation is reinvested in the property used for the service, then of course the company is entitled to a return upon that reinvestment. The amounts so reinvested should, however, be added to the original investment, and from this total the amount contributed by the consumer for depreciation should be deducted. If, on the other hand, instead of this money being reinvested in operating property, it be kept in a fund drawing interest, or put into non-operating ventures, such as outside investments, one of two methods could be used in connection with the question of depreciation. Either the amount of depreciation so contributed should be deducted from the original dollars put in by the investors, or the earnings of the invest-

ments made from this contribution should be treated as an operating income. Either of these methods should give the desired result, *i. e.*, an allowance to the consumer on account of his contribution. As an accountant, I should prefer to deduct the consumer's contribution from original investment rather than treat the income therefrom as an operating one. The inclusion of non-operating income under operating revenues is not very consistent accounting, and would be generally criticized. It seems, therefore, that the best method would be to deduct the depreciation contributed by the consumer from original investment and allow a return upon the balance.

PROFESSOR YOUNG:¹

The question is asked whether valuation for sale may properly be fixed at a lower total amount or sum than valuation for rate control. What are we to do, for example, in the regulation of a company that purchased its plant from another company at your lower valuation, if such investment yields more than an adequate return? I should say, in the first place, that we cannot assume a voluntary sale of the plant for less than its market value, as measured by capitalized earnings (not as measured by either its depreciated or undepreciated physical property), and, in the second place, in the case of sale to the city, a number of questions are raised with which neither the question nor my former statement have anything to do.

DEAN LANGMUIR, *Statistician, Public Service Commission, First District, New York City:*

I have just one word to say about Mr. Allison's remarks. Mr. Allison has said that we should not go back to the past to revise earnings. Surely, allowances for going value on the basis of early deficits constitute a distinct revision of past history. I would like to know if Mr. Allison is as strongly opposed to such allowances as he is to taking depreciation into account?

JAMES E. ALLISON, *Consulting Engineer, St. Louis, Mo.:*

I will say that I am strongly opposed to the so-called Antigo theory, which deducts for all excess profits in the past and adds for all deficits. I don't think it is practicable.

So far as taking account of deficits in making up so-called "going value," I believe that deficits over a certain initial period of the enterprise should be capitalized.

We have, in the starting of any new enterprise, a predetermined deprivation of income; the investor knows it; but he goes in nevertheless, expecting to have that deprivation of income made up to him in capitalization, which he hopes in the future will pay returns. He is entitled to this and also to a capitalization of his initial risk. Now how long a time this initial period ought to cover depends on the particular enterprise. It is a hard thing to decide and impossible of discussion in the short time allowed here.

¹Someone in the audience whose name the reporter did not get asked Professor Young whether he would base rates on a different figure from the sale value; and whether he would sell his plant for a figure to somebody and that person could get a bigger return on it than a fair return.

PROFESSOR YOUNG:

One or two speakers who followed me in the five-minute discussion raised the question whether depreciation for replacement is not the same sort of thing as the depreciation that we are talking about when we speak of accrued depreciation. Whether that is true or not depends entirely on the nature or size of the business. There are some businesses where some particularly large wasting assets may be especially important: in such cases charges must be made for accrued depreciation. Where we have large properties, with items of plant going out of service and going into service, year after year, then it seems to me that depreciation for replacement is a very different thing than the kind of depreciation which we have in mind when we speak of "total accrued depreciation"; and in general it would require very much smaller depreciation charges.

The difference is fundamental. I admit that all proper provision should have been made for adequate replacement from the beginning by all public service companies. I think we should hold them up to that standard. But I don't think that we should usually assume that (before regulation) they should have provided in a similarly adequate fashion for depreciation in market value, or depreciation in what one speaker this morning called "capital," which is really what we have in mind when we are discussing the matter of accrued depreciation.

HARRY BARKER, *Editor of Engineering News*:

In no part of all public utility discussions are sound doctrines more needed than in treating of depreciation—and nowhere are more misapprehensions visible. Even Mr. Erickson seems to harbor one peculiar and disturbing illusion, though the final results secured by him and by the Wisconsin Commission are equitable.

In his paper Mr. Erickson makes these remarks:

"Much has been said about the relative merits of the straight line and sinking fund method of providing for depreciation. Without going into details in this matter it can be said that the sinking fund method implies a more efficient use of the reserves. It also means that because of such use the amounts the customers will have to contribute to cover depreciation is less than under the straight line method. The inference that can be drawn from these facts is that the sinking fund method is the most economical and hence would also seem to be the best of the two methods from the point of view of public interests."

"In cases where the utilities have properly provided for depreciation, and where the amounts so provided have been used for necessary and proper renewals and for the accumulation of a reserve for the purpose of covering the accrued but unmatured depreciation of the property still in use, no reduction from the cost new, because of depreciation, should be made in determining the fair value for rate making and certain other purposes."

Herein, it seems to some of us, lies the delusion that many still cling to—that depreciation can be compensated for more cheaply by sinking funds than by any other plan. It is only the old, old story of something for nothing.

According to the leading United States Supreme Court

decision in this matter of depreciation compensation—the famous Knoxville Water case (*City of Knoxville vs. Knoxville Water Co.*, 1909, 29 Sup. Ct. Rep. 148)—the utility company is entitled to recover a sufficient sum above interest, cost of operation and repairs, to make good the retiring of property items as they come to the end of their life. It is entitled to see that from earnings the investment is kept unimpaired. It can base its rates only upon the present (depreciated) value of its plant.

This embodies the proposition that for every dollar by which the property has depreciated the company is entitled to be paid back a dollar of its investment—a dollar above its interest and profits. When that is done each item is completely repaid by the time it is retired, and current depreciation is made good each year. If this is not done, in the course of time, replacements, to a certain extent at least, have to be made with entirely new capital which is piled upon the old. This piling is an economic sin against future generations.

Apparently the Knoxville decision and the economic principles beneath it demand an immediate full repayment to the company to offset its losses in assets—rather than permitting a deferred payment to be locked up in a sinking fund until a machine is thrown out. The sinking-fund reserve does not meet the demands for depreciation compensation. The history of sinking-fund shows why; sinking funds were arranged (years before the need of modern depreciation compensation was felt) to provide tax funds for the retirement of public bond issues falling due. Dragging the sinking fund into depreciation finance was a mistake. Realizing that error, it is an even greater mistake for public and utility officials still to cling to the sinking-fund fiction and its necessary sequel—full undepreciated value in rate-basis worth—when every equity can be maintained before the law.

A word is needed on just how and why the sinking fund scheme falls down: It is popular to consider that, with a given length of life of a machine, the annual depreciation follows the growth of a sinking fund sufficient to extinguish the cost at the end of the probable life. Now it is well known that the annual contribution is of such a size that it will, if invested at compound interest, with the interest accumulations, equal the cost of the property item after a given term of years. The sinking-fund-annuity scheme, however, in the majority of cases, has been but a convenient method of calculating a supposedly fair burden on the customers; and the annuities have been turned back into the business.

But each annuity does not approximate the actual increment in depreciation—for this is equal to the annuity plus the interest on the accumulating fund. If the discrepancy in depreciation compensation is not provided somewhere, grave injustice will be done—for it is through the rates, and only through the rates, that the entire depreciation is made good and the investment kept unimpaired. This discrepancy between annuity and needed compensation is secured, as Mr. Erickson intimates, by allowing the company to include in rate-basis worth the full undepreciated value of the property although that value no longer exists. Part of

what should have been accounted for as direct repayment against depreciation is recovered as increased interest.

Even when an actual reserve fund is created and all annuities and interest accumulations are properly credited to it the sinking-fund scheme is no cheaper. The accumulating fund keeps pace with the depreciation it is true, but this fund—property of the company—is not free capital. It is tied up; it is earning only for its own aggrandizement; it brings the company nothing for operation or profit, so that again full undepreciated value of plant has to be used in rate-basis worth to preserve equity and prevent confiscation.

Therefore, it is seen that the sinking-fund scheme, so called, is no cheaper than a plan that aims to repay the depreciation loss immediately and as such. The objections cited to the sinking-fund scheme of providing against depreciation have led many to take up the old "straight line" plan of apportioning charges uniformly over the years. Where the operating costs go up appreciably as a machine deteriorates, this can be shown to reasonably approximate the true depreciation. But where fixed charges predominate or where operating costs do not materially rise because of age, the straight line plan gives too heavy repayment in the early years and too light charges toward the end of life. On this account various modifications have been tried; the one developed by Frederic P. Stearns is the most ingenious and the only scientific one—this is the "equal-annual-payment plan." Briefly stated, to make this record complete, each annual compensation is made equal to a hypothetical sinking-fund annuity plus the interest accretion of a hypothetical reserve fund. The annual compensation is regarded as a straight repayment of lost investment and the rate-basis worth of each ageing item of plant is constantly reduced. The sum of depreciation compensation and interest is constant. Delusions are dissipated and the whole rate-making process stands on a lawful, equitable and firm foundation.

HON. JOHN M. ESHLEMAN:

I did not intend to say another word. This subject has always appealed to me as being so simple that, perhaps, in view of all that has been said, I am the one that is simple.

I have always been impressed with the fact that we are often determined in our theory by the side we are supposed to represent. Now, I mean that; and I think it has resulted in a great deal of confusion. Too many utility men have adopted a certain theory, and have made themselves believe it is true, because some great interests are involved; and too many people on the other side—that is, supposedly on the other side, although I don't think there should be two sides to this—have adopted that view which will give the utility

the least. I don't think we should concern ourselves with the outcome of any view we adopt, provided we are intellectually honest in our view.

We have got to hold out a future; and it was necessary for us to hold out, at any particular time in the past, that inducement which will make the man of capital invest it in the enterprise in competition with other available investments. Isn't that true? Now, as the risk becomes greater, the chance of reward must be increased. The man who puts his money into this enterprise must know two things, or he won't put it in. First, he has got to get the capital back; and, second, he has got to have something for the use of it while it is engaged. Any method of depreciation must have that in view; and that is all there is to it.

I am as satisfied with what I said on the first evening, even, as I was then, that I was right; because Dr. Bauer and most of the rest who have come on here have practically taken the same view that I have on the general proposition. I say that for the past the same rules that we impose for the future, either on legal or equitable lines, cannot be imposed; but that the standard which all desire to reach for the past should be as nearly what we are going to do for the future as is possible, under the legal and economic limitations that are brought about by the fact that we did not do in the past that which we could do. But always having in mind, on this particular question of depreciation, this one thing: that it is just a question of common sense, to get our public utility work done and hold out that inducement which will lead the man of capital to do it. When we have that in mind, we must fulfil the two considerations, namely, give the capital back, and a return while it is being used, always having before us for comparison what it would cost the public to do the work as the maximum that in any event must be allowed to private ownership. And if we don't hold out the inducement I have here suggested, public ownership, of course, is the only alternative; and if the man of private capital asks for more, likewise public ownership is inevitable.

I would suggest to the utility representatives and the public that, after all, we represent the same people; and that we should not adopt that view, that will bring about the greatest return for that which we represent. But, rather, we should try to get through an absolutely, intellectually honest method for that which must be followed in order to get our utility work done. Pure common sense demands that the suggestions that I have made here as to these two considerations can never be violated; and it doesn't make a great deal of difference, from your actual depreciation, if you have had any.

PART VI—GOING VALUE

INTRODUCTORY REMARKS

BY HON. MORRIS SCHAFF

*Commissioner, Massachusetts Board of Gas and Electric Light Commissioners***G**ENTLEMEN:—

It is an enviable honor to preside over a conference where men imbued with a deep sense of justice and devotion to inspiring political ideals discuss the fundamental principles of law, public policy, business and fair dealing between man and man involved in the regulation of public service corporations. Moreover, that honor in my own case is augmented by a profound conviction that out of this Conference great good should and will come, namely, clearer, wiser, steadier and more courageous administration of the powers conveyed to our public service boards. So then, gentlemen, your chairman opens this meeting with a sense of future pleasure as well as immediate honor. And let me say that the realization of that wiser, steadier, clearer and more courageous administration of our powers has been the dream of my life as a commissioner. And in this connection I trust it will be without impropriety if I refer to the fact that my term of service on the Massachusetts Board of Gas and Electric Light Commissioners has been continuous since 1893, longer by years than that of any other commissioner I know of. Meanwhile, with an incomparable fellow laborer and leader, the late Forrest E. Barker, some hard, and I hope valuable, pioneer work has been done. We certainly blazed the way through the untraveled wilderness of the early days of regulation, and notwithstanding the desertion of a chairman and the chief clerk to the camp of Addicks (and, by the way, they never afterward came to the office without wearing an abashed look, a look such as I shall never forget on the faces of officers who, on the fields of the Wilderness and Spottsylvania and elsewhere, had abandoned their colors while the enemy's volleys were thundering in their and my ears). Well, amid desertion and the always insidious, corrupting, demoralizing influences, social and political, of the Addicks school of exploiters of gas and electric properties, we planted, and, I am proud to say, defended victoriously more than once the policy of Massachusetts which, in a word, is this:

Ceaseless and resolute protection of the companies from political demagogues, generous allowance to stockholders upon the legitimate and authorized capital of the undertaking, and, in harmony with a long, deliberate and oft-repeated policy of the great Common-

wealth, insistence upon as low a capitalization as circumstances will permit and such management as will provide for the very best care of the plant, anticipating as far as possible every call for more and better service; and finally, and above all, in season and out of season, the cultivation of honor and a high public spirit on the part of the directorates. In laying down the foundations of this policy we adopted, at an early day, in fact in 1893, a single principle that has served as a torch for our guidance, namely, that a consumer owes four natural obligations and no more to a gas or electric light company: (1) to pay what the gas or electricity costs at the burner, (2) an abundant allowance for wear and tear on the property, (3) fair, and, in case of manifest zeal and ability, a generous dividend on the money that has come out of the stockholder's pocket to build and equip the plant, and (4) in addition such a sum as will provide the management with ample funds to meet uncontrollable contingencies. When he discharges these obligations he has discharged all he owes, and, if the company be managed with honor, the money he pays in for depreciation and contingencies meanwhile will not be paid out on watered capital or on extravagant salaries. When such a policy is conservatively pursued, there is bound to be a surplus, which, if invested in the plant, is equally bound to secure to the consumer the lowest possible prices and for the investor the safest and highest possible returns.

It is easy to see that where this policy of capitalization and broad-minded regulation is carried out in good faith that the questions of reproductive values, percentages for depreciation, capitalization of franchises, going values and overhead charges are not likely to arise. We have had but one case where they were raised, the Haverhill Gas Company, and when the final trial was drawing toward a close the company raised the white flag and, by the way, it was on the 9th of April, 1914, the anniversary of Appomattox, and the surrender was complete. But the history of regulation shows that where this policy or the basic principles of equity have not prevailed, where speculative holding companies have capitalized not only what they paid for the stock but the franchises, earning powers, the surpluses paid in by consumers in addition to fair dividends and the discharge of all other

obligations, but not stopping there have issued more or less watered capital, these questions of valuation have again and again been raised. And how shall they be answered is what has drawn us here from all parts of the country.

Toward the determination of a just and satisfactory answer I offer this suggestion:

What is the financial history of the corporation with which we are dealing? Whatsoever value there be found in the real estate, the pipes, the holders, the generating station and every implement and appliance, —whence came the money that paid for them? Did it come out of the stockholders' or out of the consumers' pockets in addition to fair dividends? And how much of this valuation has been created by society or the state? Once we have pushed these inquiries to completeness, in the light of the answers we can take up the march for our goal, which is to give the stockholders and the consumers their every right—and the mighty

harmonies of justice that play in every true heart will give the music for our step to a righteous decision.

One other suggestion, that we pray the courts before which, under the Fourteenth Amendment, we are summoned in rate cases, that we pray the august tribunal with the deepest earnestness to make a distinction between the law applicable to property in the warring field of competition and that in a protected monopoly. Let us beg the august tribunals not to make a second Dred Scott decision. In that case the court found that property in a slave was the same as in land or woolen companies and lo! it took a mighty sight of blood to reverse that decision.

Gentlemen, we are charged with duties of national importance; let us perform them with patience, with disinterestedness, with sound and broad reasoning lit up by the glow of inspiring ideals, and I cannot help but think, fellow commissioners and friends, that we will bring some honor to our state and country.

GOING VALUE AS AN ELEMENT OF FAIR VALUE

BY CLIFFORD THORNE

Chairman, Iowa Board of Railroad Commissioners; former President of the National Association of Railway Commissioners

LET us first consider the meaning of terms. The curse of Babel has caused much trouble in the world.

Value is a matter of relationship between things. It has been defined as a ratio in exchange. The exchange value of a business is controlled by its earnings. If that be the sole definition of this term accepted by our lexicographers, then it must be noted that our Supreme Court has added another meaning to the term; because value for rate making purposes cannot be based on earnings, if you do not desire to reason in a circle.

Going value has been defined as that element of value resulting from the fact that the property in question is being used by a business that is established, or by a going concern.

The term "fair value," of course, is taken from that celebrated passage in *Smythe v. Ames*, 169 U. S. 466, where Mr. Justice Harlan described the basis for the determination of the reasonableness of rates. Our discussion will, therefore, be confined to a consideration of the doctrines relating to going value in rate cases.

PURPOSE OF VALUATION

There are some who have claimed that there is a so-called "true" value, independent of the purpose for which an article is to be used. We can not give

our consent to that proposition. Early in the discussion it will be well for us to squarely face that issue, and arrive at a definite conclusion.

In a Federal court case Judge Farrington once held: "The idea that a valuable franchise could be taken in condemnation proceedings, without compensation, would not be tolerated for an instant; and to permit such a franchise to be taken without consideration, indirectly, by means of rate regulation, is equally obnoxious to the federal constitution." (*Spring Valley Water Co. v. City and County of San Francisco*, 165 Fed. 667, 693.) In support of this proposition the court cited two cases—*Spring Valley Waterworks v. City and County of San Francisco*, 124 Fed. 574, and *Consolidated Gas Co. v. New York*, in the lower Federal courts, being reported in 157 Fed. 849. It is true it was there held that the franchise value must be included in the value for rate making purposes. This decision in the California Federal court was rendered in October, 1908, and during the 1908 October term, on the 12th day of the following January, the Supreme Court of the United States, on appeal, in *Willcox v. Consolidated Gas Co.*, 212 U. S. 19, declined to include any of the franchise value, except that portion formerly established under a special statutory provision. The Gas Company claimed that "the State having taxed it upon its franchises cannot be

heard to deny their existence on their value as taxed" (p. 51). The court held, "the fact that the State has taxed the company upon its franchises at a greater value than is awarded them here, is not material" (p. 51). The taxes were treated as a part of the operating expenses, over and above which the company was entitled to an adequate return.

The differences in principles applicable to rate cases, and purchase cases, have also been specifically recognized by the Supreme Court of the United States. A leading case involving the doctrine of "going value," in a purchase and sale case, is *Kansas City v. National Waterworks Co.*, 62 Fed. 853.

Mr. Justice Lurton in *Omaha v. Omaha Water Co.*, 218 U. S. 180, 202, decided in 1910, speaking of "the commercial value of the business as a going concern," as distinguished from cost of duplication less depreciation, and good will, referred with approval to the doctrines laid down in the *Kansas City Waterworks Case*, subsequently followed in *Gloucester Water Supply Co. v. Gloucester*, 179 Mass. 365, and *Norwich Gas & Electric Co. v. City of Norwich*, 76 Conn. 565, none of which were rate cases. Mr. Justice Lurton added: "No such question was considered in either *Knoxville v. Knoxville Water Co.*, 212 U. S. 1, or in *Willcox v. Consolidated Gas Co.*, 212 U. S. 19. Both cases were rate cases, and did not concern the ascertainment of value under contracts of sale."

It must be accepted as a settled doctrine that the elements of value differ, owing to the purpose for which the valuation is being determined.

We will endeavor to confine our attention, so far as possible, to a consideration of the determination of values for rate making purposes, rather than to venture out into a dissertation upon values for taxation, condemnation, and capitalization purposes, accompanied by a discussion of the differences between them.

Property values may be classified under two heads: tangible and intangible. That which is tangible can be seen or felt, and is more easily arrived at, than that which is intangible.

INTANGIBLE VALUES

The variations in valuations determined by experts are amazing; and one principal source of this variation is in the method adopted for the determination of intangible values. That does not mean that there are

no difficulties in the determination of tangible values; for they are many, and of large proportions. Going value, according to the conception of many, constitutes a large part of intangible value; in fact, it constitutes one of the chief battlegrounds between utilities and cities at the present time, so far as intangible values are concerned.

Our utility companies have naturally sought to devise methods by which they can add to the actual value of their tangible assets a large intangible value, with which to support the earnings they have been receiving in former years, or better still, sustain increases.

GOING VALUE AND GOOD WILL

There is much in the cases to show that the ordinary conception of "going value" includes what was formerly referred to as "good will." This is true both because of the factors creating the value considered by these gentlemen, and also because of the percentage, or amount, allowed for going value, and good will.

It matters little what terms are used. What concerns us is the amount of money allowed. Let us consider both of these propositions for a few moments.

Lord Eldon defines good will to be "nothing more than the probability that the old cus-

tomers will resort to the old place." John W. Alvord defines going value as the value of a created income, adding: "thoughtful consideration of going value shows that it has no existence without earnings." In other words, in the case of a thoroughly completed water plant connected with all of its customers, and conducting a large business, if for some reason on and after a certain date none of those customers would purchase any more water from the said company, the going value of that property on that date would be *nil*. Going value, with that meaning of the term, would seem to depend entirely upon the good will as defined by Lord Eldon. If there were no probability that the old customers would resort to the old place, there would be no going value, and no good will value, as defined by Lord Eldon and Mr. Alvord.

Commenting on Lord Eldon's definition, Vice-Chancellor Wood stated that good will "must mean every positive advantage that has been acquired by the old firm in the progress of its business, whether connected with the premises in which the business

"I believe the following states the law of today, as established by the weight of authority:

"Justice to the owners, and the best interests of the public, demand that legitimate expenses for which a company has not been compensated, expenses necessary and actually incurred in the original construction and establishment upon a paying basis of a public utility, reasonably necessary for public use, prudently constructed, and wisely managed, should either be returned to the owners, or should constitute a part of the value upon which the said owners are entitled to an adequate return. I believe there is money awaiting investment on reasonable terms, where that, and nothing more, is assured."

HON. CLIFFORD THORNE.

was previously carried on, or with the name of the late firm," etc.¹

Again, the Supreme Court of the United States says:

"Undoubtedly, good will is in many cases a valuable thing, although there is difficulty in deciding accurately what is included under the term. It is tangible only as an incident, as connected with a going concern or business having locality or name, and is not susceptible of being disposed of independently." (*Metropolitan Bank v. St. Louis Dispatch Co.*, 149 U. S. 436, 37 L. Ed. 799.)

These terms are all closely interlaced, and related to each other. The franchise value of a public utility has frequently been used to embrace all such factors as going value, good will, the worth of the business, etc.

The New Jersey Commission uses the term "going value" as inclusive of intangible values. This conclusion was based largely upon the testimony of one witness in the case, Mr. Royce.² Mr. Royce's definition of going value was framed in the following words:

"Practically all elements of value which the company may possess outside of its actual structural value and the tangible worth and value of its quick assets."

Mr. Royce testified that he includes:

"Whatever value would attach to the franchise value of (or?) advantage for the value of a going business, a live business, producing a profit; the prospective increase and the opportunity for the investment of additional capital in enlargements, and all that."

Approximately 25½ per cent was allowed for franchise value by the lower Federal court in the Consolidated Gas Case, 212 U. S. 19, where several of the companies consolidated had paid dividends ever since their creation, averaging 16 per cent, and six companies had paid 18 per cent and earned 25 per cent during the year 1884, when the franchise value was estimated under statutory authority, at the percentage stated above. That allowance is not very much in excess of some of those now being urged for going value alone, where the profitableness of the business is but a fractional part of the enormous profit the Consolidated Gas Co. was earning at that time.

It will be noted that the 25½ per cent allowance for franchise value in the Consolidated Gas Case was intended to cover an increase in the franchise value occasioned by the growth of the business during a period of over twenty years. The Supreme Court disapproved of this franchise value, and allowed only that portion which had been arrived at in 1884 which was "fixed and agreed upon under the Act of 1884 as conclusive at that time."

In order to make the percentage strictly comparable,

¹ See *Menendez v. Holt*, 128 U. S. 514, 522.

² In *re* Public Service Gas Case, 1 N. J. Rep. 433, 477.

there must be a slight reduction in the 30 per cent allowed for going value by the New Jersey Commission in the Public Service Gas Case, *supra*, for their percentage was only applied to the structural value of the company's property.

It is true that the item "going value" was not discussed or put in issue, as such, in the Consolidated Gas Case; but that phrase represents a substitute for all, or a part, of those factors which the Consolidated Gas Co. did put in issue, as representing its intangible property.

In the Cedar Rapids Gas Case the Supreme Court of Iowa used the term going value as almost synonymous with good will. Likewise, Judge Sloan, the master in the Des Moines Gas Case, 35 Sup. Ct. Rep. 811, held the two terms to be practically synonymous. In both cases the amount claimed was denied; and in both cases the United States Supreme Court sustained such refusal.

VARIATIONS IN VALUATION

Mr. Floy, in his work on valuation, says in regard to going value:

"There is no element included in the total valuation of utility property concerning which there is greater difference of opinion or more controversy and indefiniteness with regard to methods of its valuation."

We all agree that experts are honest, and we also agree that there is, and always will be, wide room for variations in judgment as to values. But it is an interesting coincidence to note that when a city and a company employ their experts, and the findings are submitted, under oath, by these witnesses, giving the results of their best thought, and training, and investigation, to the court or commission, the higher values are invariably those prepared by the men employed by the utility company. I attack the integrity of no person. I merely suggest this as an interesting coincidence; that is all.

There may be exceptions to the law of chance, governing the testimony of experts, as just stated; but I have found not one instance in the scores of valuation cases which I have had occasion to read. This would make a very valuable example for the critical analysis of the psychologist, or the learned student of experimental ethics, wherein the golden rule is charge what the traffic will bear; or, translated into plain, ordinary English, get all you can.

It is not fair to imply dishonesty in the ordinary valuation experts. The differences exist largely in methods followed. Some of the variations in methods have become storm centers for unending discussions by courts, commissions, attorneys, witnesses and students.

As you all know, these variations are not mythical nor theoretical, but real and tangible, when reduced to dollars and cents. One illustration at random will be cited. In *Spring Valley Water Co. v. San Francisco*, reported in 165 Fed. 667, 685, eleven valuations were introduced in the evidence. The lowest made by the company was higher than the highest made by any of the experts employed by either the city or the county. Two of these appraisals of the same property, in the same case, for the same purpose, varied more than 300 per cent. This may be unusual; but it is very ordinary to find variations ranging from 100 to 150 per cent. When appraisals vary 100 per cent, an investment in a shrewd, capable persuasive expert is about as wise as an investment in a gas plant. One will yield the same return as the other; and the expert won't blow up, under ordinary circumstances.

Not only do expert witnesses vary largely in their estimates, but commissions and courts also vary, greatly, in their conclusions. In 1913 one eastern state commission held that a gas company was entitled to a return upon the cost of reproduction, new, plus a blanket allowance of 30 per cent on structural value; and further, that the company was entitled, over and above operating expenses and taxes, to an amount equal to 8 per cent on the entire tangible and intangible value of the property, in addition to a 2 per cent depreciation allowance, making in all about 10 per cent on the property.

About the same time, as referred to in the preceding paragraph, a distinguished gentleman, who was chairman of the New York Commission, 2d District, held that a company was entitled to no allowance whatever for going value, unless it could show early losses that had not been adequately recouped in later years. And further, speaking for the Commission, he held that there was an abundance of money, awaiting investment in this class of securities at 6 per cent or less. The latter gentleman lost his job; but he was a man of such sagacity and ability that one of the greatest railway systems in America immediately employed him as their attorney. He is with us at this conference.

METHODS OF DETERMINING AMOUNT OF GOING VALUE

In determining the amount to be allowed for going value, or development cost, both the utility and the public are most profoundly concerned in the method of computation; for, upon that issue depends the amount of money allowed.

Various methods have been proposed and rejected, or approved, by different tribunals. The consideration of these methods raises several important issues.

When there is no proof of losses, not recovered in

later years, shall a blanket theoretical allowance be made, or what will be the presumption adopted?

If the property has earned a reasonable return during its entire history, shall any allowance be made for the present worth of its developed business, or for the cost of the development of said business?

Shall early losses be offset by later profits?

Shall the allowance be confined to expenses actually incurred during the early years of the plant, when it was in the experimental stage; or shall allowance be made for the cost, or present worth, of the entire existing business possessed by the company, by an attempted capitalization of the deficits in operation, throughout the entire history of the property?

What is a reasonable rate of return, below which an earning should be considered inadequate, and a justification for charges to development cost, or going value?

Shall the allowance be made on the so-called comparative plant basis, or by the capitalization of deficits?

Shall the allowance be made by adding to the value of the property, upon which the company is entitled to demand a return; or by allowing higher rates of return temporarily?

Time will forbid an adequate discussion upon all these propositions; but we will endeavor to present some phases of the problems raised.

PRESENT WORTH OF ENTIRE BUSINESS

In determining the value of a plant for rate making purposes, shall allowance be made for the cost, or present worth, of creating the entire existing business possessed by a company, or shall it be confined to expenses, actually incurred, necessary and uncompensated, during the early years of the plant, when it was in the experimental stage, and before it was placed on a paying basis?

On the one hand, we have such eminent authorities as the Wisconsin Commission, the New Jersey Commission, and Messrs. Alvord and Metcalf, supporting the proposition that it is the cost of producing the existing business, in the present condition, or the present worth of those expenditures so made, during the entire history of the plant, which should be considered.

On the other hand, we have such eminent authorities as the New York Public Service Commission, 1st District, the New York Public Service Commission, 2d District, the New Hampshire, Missouri, Oklahoma, Georgia, North Carolina, Idaho, Arizona, Massachusetts, and Connecticut commissions, and a number of experts, such as Professor Bemis, who confine the allowance to actual proof of expenditures during the early experimental or development period, until the property was placed on a paying basis.

More recently, the New Jersey Commission has confined its consideration to the first four years in the life of a certain company involved in one of their cases, by reason of the fact that the said company estimated that it would take them that long to get on to a paying basis.

On the issue we are here discussing there are not over three decisions of the Supreme Court of the United States in point.

The first rate case before the Supreme Court involving the element of going value was *Knoxville v. Knoxville Water Co.*, 212 U. S. 1. The Supreme Court did not find it necessary to decide the issue presented, but left the question to be considered when it might necessarily arise in the future.

In the Consolidated Gas Case, the lower Federal court allowed for the value of the franchises as of the year 1884, but found an increase of over 25 per cent in the tangible assets of the property twenty-three years later, and the court also found an increase in the business of almost 400 per cent. If the franchise was worth \$7,000,000 in 1884, the court felt that it was worth at least \$12,000,000 in 1907, assuming the value of the business, or the franchise value, increased in the same ratio as the value of the tangible property. The Supreme Court stated on this issue:

"But although the state ought, for these reasons, to be bound to recognize the value agreed upon in 1884 as part of the property upon which a reasonable return can be demanded, we do not think an increase in that valuation ought to be allowed upon the theory suggested by the court below. Because the amount of gas supplied has increased to the extent stated, and the other and tangible property of the corporations has increased so largely in value, is not, as it seems to us, any reason for attributing a like proportional increase in the value of the franchises." (*Willcox v. Consolidated Gas Co.*, 212 U. S. 19, 47.)

As a reason for this conclusion the court said that the former value of the franchises was founded upon the opportunity of obtaining enormous and excessive returns upon the property in the company without any legislative interference with the price of gas. This decision clearly indicates that the growth or development of the business is not a matter of valuation.

The leading rate case at the present time involving the issue of an allowance for going value is *Des Moines Gas Co. v. Des Moines*, decided on June 14, 1915. (35 Sup. Ct. Rep. 811.)

There was a disagreement between counsel as to whether or not the master did in fact make a certain allowance of \$300,000 for going value. The Supreme Court holds that the master did not include the said \$300,000 in the total valuation of the plant. Whether or not the master did make sufficient allowance, other-

wise, for the value of an assembled and established business, earning money, was the controlling issue in the case.

There are two distinct periods in the life of this utility, common to all public utilities, that must be borne in mind. First, we have the inception, or experimental stage, of the business; and second, there is the gradual development up to the present size and character.

The issue we are now considering involves the second stage, or the second portion of the life of the company. The master estimated the worth of the business, as developed, to be \$300,000. In this, he stated that he did not include the element of good will, as ordinarily applied to a merchant or manufacturer. Without a business, he said, no matter how perfectly the plant may be built, it would be unprofitable. There is a great difference, he added, between such a plant as was involved in this case, and one whose business must be developed. He included "simply the fact that it has a developed business, that will make money for its owner, with reasonable rates allowed for the product which it manufactures and sells."

At first, the master was inclined to allow this sum which he determined to be the value of the business as developed. The decision of the Supreme Court in the Cedar Rapids Case caused the master to change his mind, and to decline the allowance he formerly proposed, of \$300,000 for "going value as a separate item." A reference to the Cedar Rapids Case is here necessitated.

In *Cedar Rapids Gas Light Co. v. Cedar Rapids*, 223 U. S. 655, 669, counsel urged as one of the errors of the Iowa court, that nothing was allowed for going value. The Supreme Court, in passing upon that issue, stated:

"Although it is argued that the court excluded the going value, the court expressly took into account the fact that the plant was in successful operation. What it excluded was the good will or advantage incident to the possession of a monopoly, so far as that might be supposed to give the plaintiff the power to charge more than a reasonable price." (*Willcox v. Consolidated Gas Co.*, 212 U. S. 19, 52.)

The master in the Des Moines Gas Case used the term "going value" in one place as including: first, the value due to the fact that the plant is in successful operation; and, second, that enhancement which results from a well developed and paying business. His allowance, finally made in the case, included the first, but excluded the second. The company's claim was that the exclusion of the second was reversible error.

Our query then becomes: what was allowed under

the heading of the established business; and second, what was disallowed under the heading of going value. The master said:

"Were the City of Des Moines without such a plant, and such a one as the complainant now owns was proposed, it would be found that much more than the mere cost of labor and material would be expended. Such expenditures are termed overhead charges." (35 Sup. Ct. Rep. 811, 815.)

Under this heading of overhead charges, the master listed: Promotion and organization expenses, including legal expenses, obtaining franchise, and cost of incorporation. Second, engineering expenses. Third, losses due to accidents to workmen and materials during construction. Fourth, contingencies. Fifth, cost of administration, including time and money expended by persons purchasing material, procuring money, and general superintendence during the construction of the plant. Sixth, interest during construction. And seventh, taxes during construction.

All of these expenditures would be necessary during the promotion or construction of the plant. He made no allowance for overhead charges that do not inhere in and add to the cost, as a part of the physical value of the plant. In this way he arrived at reproduction cost, new, from which he deducted depreciation. Midway between these overhead charges occurring during construction, and the value due to that enhancement resulting from the present well developed business, is the early period, or experimental stage, placing the business on a paying basis.

The Supreme Court, dealing with this factor, stated:

"The inception cost of the enterprise entering into the establishing of a going concern had long since been incurred.—It is not to be presumed, without proof, that a company is under the necessity of making up losses and expenditures incidental to the experimental stage of its business." (35 Sup. Ct. Rep. 811, 815.)

The Supreme Court confirmed the lower court, sustaining the findings of the master, which disallowed the claim for \$300,000 going value, using that phrase in the limited sense adopted by the master, and excluding therefrom the preliminary cost of establishing the business.

A similar principle was clearly recognized by the Supreme Court in the Consolidated Gas Case, *supra*. Therefore, our conclusion is:

That portion of going value which relates to the enhancement of value of the property resulting from a well developed and paying business, as distinct from the preliminary cost during the experimental stage of establishing the business, is not a part of the value of a property, upon which a public utility is entitled to demand a return.

In both of these cases, the Cedar Rapids and the Des Moines Gas Case, the Supreme Court sustained the lower courts, stating that the said lower courts had valued the property as in "successful operation"; and, consequently, the so-called "going value" had been adequately cared for. It will be noted that the court considers three things, in this case: first, cost of reproduction, new, less depreciation, and including overhead charges; second, the lack of proof of any expenses in early years, not recovered in later years; and third, the fact that the property was "in successful operation." It becomes of prime importance to analyze the meaning of this phrase.

SUCCESSFUL OPERATION

If a plant is able to pay all its taxes, operating expenses, and a reasonable return on the actual investment, or on its cost of reproduction-new-less-depreciation, that plant is in successful operation.

If the plant were not in successful operation, the cost of reproduction-new-less-depreciation, would produce a sum in excess of its present value.

A given piece of telephone wire has several values, owing to its condition, location and use. When in a roll, ready for sale, it has a physical value, new. When stretched between poles, as a part of a telephone plant, which is in successful operation, it has an operating value. When stretched between poles as a part of a telephone plant, having an exclusive franchise for twenty-five years, it has a franchise value. When a part of a plant belonging to a private concern, having a large patronage, and making handsome profits, it has a good will value. When a part of an abandoned plant, belonging to a company that has failed, the wire being gathered up, and ready for sale, it has a junk value. When stretched between poles, and a part of an abandoned plant, it has a value less than that of junk, for it costs something to gather it up; salvage value is too broad a term, for that may include junk value, or may be even greater; for lack of a better term we will refer to this as "scrap value."

So the property of a public utility plant may have, roughly speaking, six kinds of value; which, if placed in more logical order, would read something like the following:

1. Scrap value.
2. Junk value.
3. Physical value, new; not in place, and not part of an operating plant; the "bare bones" value.
4. Operating value; or value of property in successful operation.
5. Franchise value.
6. Good will value.

Going value is a very ambiguous term, used in many senses. It may be described as including the last three: operating, franchise, and good will values. Some would say it only included one of these; others would claim it included all. I rest my conclusion on the use of the term going value, as adopted by both the state and Federal courts, in the last two rate cases involving the subject of going value, which were carried through to the court of last resort: the *Cedar Rapids Gas Co. v. Cedar Rapids*, *supra*, and *Des Moines Gas Co. v. Des Moines*, *supra*.

The value of a plant, as a whole, in successful operation, is greater than the value of its component parts not in place.

Again, there is a difference in value between a completely constructed plant in successful operation with a business earning, say, 6 per cent on the "fair value" of its property, and another plant which is earning 16 per cent. The commercial value of the latter would be much greater than that of the former. Those who desire to find the value of the business belonging to the latter, are trying to find the commercial value of the plant. So we have the bare physical value of the component parts, the value of those parts in place, in successful operation, and the commercial value, which is measured by the profits, or net income, of the company.

There are many facts which have been stated in decisions, and briefs, showing how great is the difference between the value of the physical property alone, the "bare bones," and the value of the same property as a part of a plant in successful operation.

When a customer is added to an electric light company's list of patrons, the advertising, canvassing, stringing wires, connecting them with the house, the expense of furnishing catalogs, and the other expenses connected with securing that customer, are all charged to operating expenses. It would be passing strange to then capitalize this, which has already been paid and charged to operating expenses.

There is a sort of going value which inheres in, and is a part of, the physical property, because of the fact that the various component units are connected up and the entire structure makes a complete workable and working machine. That part of the going value which does not inhere in, nor become part of, the physical property, applies to the business of the company and does not apply to its property. That part is more fairly described as the "good will" of the company.

There was an old, dilapidated building described in the record of the Des Moines Gas Case, *supra*. The building, it was stated, would be worth practically

nothing, were it not because it was connected with the plant, in active operation. In that capacity its value was very real and tangible.

A 24-inch pipe lies under the Des Moines River. If that pipe were disconnected from the gas plant, and not bearing part of the burden of the completed machine, nobody would pay the expense of removing the pipe for what they could get out of it; and yet, lying in the bed of the river as a part of a going concern, known as the Des Moines Gas Plant, that pipe has a substantial value, including both the material and the labor cost necessitated for fastening the pipe together, laying it properly in the river, and connecting it with the plant.

It is only through being connected together, and in operation, that gives a value to these parts equal to the cost of reproduction, new, less depreciation, added to the overhead charges.

In *Cumberland Telephone & Telegraph Co. v. City of Louisville*, 187 Fed. 637, 646, the court stated, that in valuing the property it would be looking at "its bare bones" if you did not take into consideration the fact that the company was a going concern. That fact, the court continued, "though possibly somewhat unconsciously to themselves, must necessarily, we think, have been taken into account by the witnesses who testified as to values." Property, underground or overhead, thinly strung out over many miles, continued the court, would have a very diminished value, were it not in actual use for the purpose for which it was installed. "The matter does not appear to have been passed upon in the report, nor, while it is argued in the brief, does any exception appear to be based upon this phase of the case, but we have concluded that this element of value, would hardly be susceptible of accurate measurement by and of itself, and we shall consider the fact to be that it was an inherent factor in the estimate made by each witness who testified as to values."

I believe Judge Savage, in *Brunswick Water District v. Maine Water Co.*, 99 Me. 371, 376, correctly stated this principle, as follows:

"We speak sometimes of a going concern value as if it is, or could be separate and distinct from structure value,—so much for structure and so much for going concern. But this is not an accurate statement. The going concern part of it has no existence, except as a characteristic of the structure. If no structures, no going concern. If a structure in use, it is a structure whose value is affected by the fact that it is in use. There is only one value. It is the value of the structure as being used. That is all there is to it." (See also *Spring Valley Waterworks Co. v. San Francisco*, 192 Fed. 137, 167, 168.)

REVIEW OF DECISIONS BY VARIOUS COMMISSIONS

Mr. Commissioner Maltbie, while on the New York Public Service Commission, 1st District, made some distinguished contributions to this subject. Most of the positions taken by Mr. Maltbie will be found reflected in the recent decision of the Supreme Court of the United States in the Des Moines Gas Case, especially as to the necessity to prove actual losses, instead of mere conjectural and speculative deficits and, most important of all, the confining of the period of development to the early experimental stage, rather than extending it through the entire life of the plant.

The opinion written by Mr. Maltbie in *Mayhew v. Kings County Lighting Co.*, 2 New York Com. 1st District, 659, has been reversed recently by the Appellate Division of the New York Supreme Court and by the Court of Appeals. The Appellate Court enters upon a lengthy discussion of the issues, but takes positions very similar to those adopted by the Commission. The ground given for the court's reversal is that no allowance, or practically no allowance, was made for going value in either the rates or the valuation, so far as the Commission's decision shows. The paragraph to which the court takes special exception is as follows:

"It should be noted that the plant has been in operation for nearly twenty years, and it might be argued with considerable force that two decades should be sufficient for the company to recoup its early deficiencies below a fair rate of return, if any such deficiency below a fair rate of return, ever existed. If the company has not recouped itself by this time, under such circumstances it is doubtful whether the present consumers ought to be burdened for this reason." (*Mayhew v. Kings County Lighting Co.*, 2 New York Com., 1st D., 659.)

The statement expresses a doctrine very analogous to the one noted in the Des Moines Gas Case, where the court says:

"It is not to be presumed, without proof, that a company is under the necessity of making up losses and expenditures incidental to the experimental stage of its business."

Testimony sustaining Mr. Maltbie's position was quoted by the Federal court in the case entitled *Spring Valley Waterworks Co. v. San Francisco*, 192 Fed. 137, 167, where Mr. Hering, a witness for the complainant, testified that as the cost of establishing a business

"has been or should have been covered by the schedule of water rates, further allowance at the end of the term would then be its duplication."

In the development and crystallization of these doctrines which have been reflected in the conclusions arrived at by the Supreme Court as to going value,

the Wisconsin Commission, of which Mr. Erickson, who is with us today, has been such a distinguished member, has taken a leading part in solidifying the arguments against blanket allowances in support of the theoretical cost of the development of the business. The Wisconsin Commission has consistently advocated confining the allowances to actual *bona fide* losses; the careful discrimination between factors worthy, and those not worthy, of being considered in arriving at the cost of development; and in offsetting losses by later profits in the business. There is an able discussion of the issues, from the Wisconsin Commission standpoint, in *Hill et al. v. Antigo, etc.*, 3 Wis. Com. 623. This Commission has practically followed the historical method, though some of the conclusions as to the capitalization of deficits in operation running through the entire life of the company, said deficits not having been offset, have failed of acceptance by other state commissions, or by the courts.

A witness before the Wisconsin Commission in *State Journal P. G. Co. v. Madison Gas & Electric Co.*, 4 Wis. Com. 501, sought to establish a blanket allowance of 33 $\frac{1}{3}$ per cent over and above the physical value of the plant, for going value. It was sought to separate the blanket allowance into its component parts, but the witness declined to do so, save to suggest the various elements going into it. He gathered his knowledge from the pure ethereal haze of the Divine atmosphere, which is denied to us common mortals. His testimony had little weight with the commission.

The expert services of Professor Bemis in many rate cases, before commissions and courts, have been of great value in establishing the doctrines of requiring proof of actual losses, instead of relying on glittering generalities and theoretical computations.

A leading opinion written by Mr. Commissioner Stevens while on the New York Public Service Commission, dealing with these issues, is entitled *Fuhrmann v. Cataract Power and Conduit Company* (3 N. Y. Com., 2d District, 656). In this decision there is an able discussion of the distinction between a valuation for rate making and purchase. The Commission holds that deficits in operation should not be capitalized. "The loss is not an investment in the business, but it is a circumstance which may justify a higher rate when the business does become remunerative than would be just if no such loss had been incurred." (*Ib.* 699.)

In a later case entitled *Fuhrmann v. Buffalo General Elec. Co.*, 3 N. Y. Com., 2d District, 739, the principles stated in the Cataract Case were reaffirmed; the Commission holding that those matters which commonly constitute going concern value should not be allowed as a part of the property upon which the

company could demand a return. The Commission adds:

"We also found that a situation might exist in which the company had incurred expenses, or had deferred profits at the commencement of business during the unprofitable period of operation which sometimes follows the establishment of a new business, which would entitle it fairly and justly to a return from the public in increased rates during such period of time as might be found necessary reasonably to reimburse the company for these matters." (*Fuhrmann v. Buffalo Gen. Elec. Co.*, 3 N. Y. Com., 2d District, 769.)

Further, the Commission says that an analysis of the losses and profits should be made. This they did, and found in the said case no justification for the demand of allowances for early losses.

After Mr. Commissioner Stevens left the New York Public Service Commission, in a decision entitled *Application of Federal Telephone and Telegraph Company* (34 Commission Leaflets 1081) the New York Commission, 2d District, made an allowance of \$150,000 for going value. The Commission did this on the ground of the decision of the New York courts in their reversal of the New York Commission, 1st District, in the case entitled *People ex rel. Kings County Lighting Co. v. Willcox*, 141 N. Y. Sup. 677. The decision of the appellate division of the New York Supreme Court was confirmed by the Court of Appeals, March 24, 1914. (*People ex rel. Kings County L. C. v. Willcox*, 210 N. Y. 479.)

An able discussion of the proposition involved can be found in a decision of the New Hampshire Public Service Commission, entitled *Hobart Pillsbury et al. v. People's Gas Light Company* (32 Com. Leaf. 608). The New Hampshire Commission states that if opinion evidence in that case were accepted, it would support a claim of \$204,000 for early losses, and \$36,000 for early expenditures. Investigation proved, according to the decision of the Commission, that none of these had ever "existed except in the imagination of the witness." The Commission adds:

"If the mere expression of an opinion by a witness that it cost such an amount to secure a customer or such an amount to build up a business, were to be held to constitute proof of value to that extent, then the less complete the financial records of utilities the more valuable are their properties in most cases.

"It would seem more reasonable that a utility which has sustained losses, and knows the facts, should prove such losses, and show why they should be considered as enhancing value, than that losses should be assumed in all cases unless actually disproved by the representatives of the public, who do not have knowledge of the facts, and who will often be unable to obtain proof thereof." 4 N. H. Com. 337, 32 Com. Leaf. 608, 665. (See also *Berlin Electric Light*

Company Case, 3 New Hampshire Com. 174; *Petition of Grafton County Elec. L. & P. Co.*, 32 Com. Leaf. 580, 587.)

A leading case before the Missouri Public Service Commission is *McGregor-Noe v. Springfield Gas & Elec. Co.*, 1 Mo. Com. 468. This decision presents an extended discussion of the principles involved in the determination of going value. The opinion was written by Chairman Atkinson and Commissioner Shaw. Two methods for determining going value were presented, as follows: The comparative plant method by Mr. Floy, the author of the text-book entitled "Valuation of Public Utilities"; and the amount of early losses, if there were any, this being presented by Mr. Einstein, the general manager of the Union Electric of St. Louis.

The Commission makes an able review of the decisions, and concludes against making an allowance for any so-called going value, without proof of unremunerated losses, and cites a series of cases where no such allowances have been permitted. (*McGregor-Noe v. Springfield Gas & Elec. Co.*, 1 Mo. Com. 468, 523.)

The Supreme Court of Iowa, in *Cedar Rapids Water Company v. Cedar Rapids*, 118 Iowa 234, declined to allow anything for going value as a separate factor in the valuation.

"By 'going value' we understand is meant that value which arises from having an established 'going' business. While not the exact equivalent of 'good will,' as applied to ordinary business, it is of a somewhat similar nature, and attaches to the business, rather than to the property employed in such business. The fact that the business is established is, of course, a material fact in ascertaining the value of the plant, and especially is this true where the property is being estimated for the purposes of sale or condemnation; but as a basis for estimating profits its significance is less apparent. The merchant who sells an established business may properly place a high value on the good will which he relinquishes to the buyer; but so long as he continues in the enjoyment of the business he has created he does not add the value of the good will to his capital stock in estimating the percentage of his annual profits." (*Ib.*, 262, 263.)

Judge Taylor in 1909 allowed nothing for going value in connection with the appraisal of the Cleveland Street Ry., stating:

"I allow nothing for going value. Going value raises a question of definition, and it is sufficiently disposed of, according to my view, by saying that it only has a value, as applied to a street-railroad enterprise, because of the expenses incident to organization, superintendence, administration, legal expenses, and interest during construction; it is involved in the general subject of necessary overhead charge, and arises only out of, and is to be defined and limited entirely by, the money necessarily expended to put it

into the shape where it has value as an operating instrumentality. Beyond that, I recognize no value to going value or no such thing as going value to be applied to a street railroad enterprise." Cited in *re* Rates of Queens Borough Gas & Electric Co., 2 New York Com., 1st D., 544, 567.¹

CAPITALIZING DEFICITS

An argument urged against early deficits being cared for out of higher returns during a few years, is that it makes a few consumers bear the burden; whereas they should be spread out over the entire life of the property and thereby enable all to pay their share. We are told that the rates should be low in the first few years of an enterprise, in order to develop a patronage.

Let us consider the status in the early life of a railroad. What was the condition of the early settler? He went out into a new country, bought his land at \$2 or \$4 per acre. Corn and potatoes were worth little until the railroad came. In the early days they could afford to pay high rates. That enabled them to sell crops off of cheap land, and then land values began to climb. They made money on their investments. In somewhat the same way most of our improvements of a public character are of the greatest value in the earliest stages, and they command the highest prices at that time. Freight rates first competed with horses, and the charges were accordingly. Later, when railroads competed with each other, the rates rapidly declined from 20 cents a ton mile to less than one cent, where they are today. Automobiles, electric lights, the mail service, telephone, all cost the public the most in their early years.

We have been given the impression that there is a short period in the life of a company, during its early development, when losses occur and that these can be fairly attributed to the cost of establishing or developing the business. But we find these lean years scattered all through the life of a company; in one or a few years there is a great prosperity, and then a period of depression.

The following tables are typical selections from the decisions of the Wisconsin Commission, which is the principal champion of the doctrine that losses occurring

¹ A few other decisions, by courts, as well as commissions, presenting somewhat similar doctrines to those we have described, are as follows: Application of Lincoln Tel. & Tel. Co. for authority to advance rates (Nebraska), 19 Com. Leaf. 134; *City of Ely v. Ely Light & Power Co.* (Nevada), 24 Com. Leaf. 578; Application of Macon Ry. & Light Co. (Georgia), 29 Com. Leaf. 1072; *In re Haverhill Petitions* (Massachusetts), 15 Com. Leaf. 324; *Petition of McMurray et al.* (Connecticut), 33 Com. Leaf. 905, 917; Application of Pocatello Water Co. (Idaho), 30 Com. Leaf. 1347, 1365; *Bolen v. Pioneer Telephone & Telegraph Co.* (Oklahoma), 27 Com. Leaf. 111, 131; *Spring Valley Water Co. v. City and County of San Francisco*, 165 Fed. 667; *Spring Valley Waterworks v. City and County of San Francisco*, 192 Fed. 137; *Contra Costa Water Co. v. Oakland*, 113 Pac. 668, 676.

throughout the entire life of a business should be capitalized.

RATE OF RETURN UPON AVERAGE COST OF REPRODUCTION NEW

SUPERIOR WATER, GAS AND ELECTRIC COMPANY—ELECTRIC DEPARTMENT

Year	Rate of Return	Year	Rate of Return
1890.....	9.30	1901.....	.87
1891.....	14.60	1902.....	1.74
1892.....	15.00	1903.....	....
1893.....	8.87	1904.....	1.29
1894.....	5.76	1905.....	1.86
1895.....	5.06	1906.....	2.64
1896.....	6.38	1907.....	8.85
1897.....	5.00	1908.....	7.23
1898.....	3.91	1909.....	8.90
1899.....	....	1910.....	11.37
1900.....	1.52	1911.....	12.80
		Total.....	5.59

(*Superior Commercial Club v. Superior W. L. & P. Co.*, 10 Wis. Com. 704, 756).

RATE OF RETURN UPON AVERAGE COST OF REPRODUCTION NEW

SUPERIOR WATER, GAS AND ELECTRIC COMPANY—WATER DEPARTMENT

Year	Rate of Return	Year	Rate of Return
1890.....	1.88	1901.....	4.26
1891.....	6.87	1902.....	5.31
1892.....	8.43	1903.....	5.33
1893.....	8.23	1904.....	5.57
1894.....	8.87	1905.....	5.16
1895.....	8.72	1906.....	5.29
1896.....	7.69	1907.....	5.66
1897.....	5.59	1908.....	3.60
1898.....	4.96	1909.....	5.93
1899.....	3.98	1910.....	6.56
1900.....	4.24	1911.....	6.25
		Total.....	5.83

(*Superior Commercial Club v. Superior W. L. & P. Co.*, 10 Wis. Com. 704, 754.)

RATE OF RETURN UPON AVERAGE COST OF REPRODUCTION NEW

SUPERIOR WATER, GAS AND ELECTRIC COMPANY—GAS DEPARTMENT

Year	Rate of Return	Year	Rate of Return
1890.....	1.71	1901.....	1.43
1891.....	13.35	1902.....	5.97
1892.....	14.38	1903.....	5.10
1893.....	11.68	1904.....	2.29
1894.....	5.84	1905.....	5.23
1895.....	2.16	1906.....	6.58
1896.....	1.97	1907.....	7.76
1897.....	1.30	1908.....	3.40
1898.....	5.15	1909.....	7.41
1899.....	....	1910.....	8.38
1900.....	....	1911.....	7.87
		Total.....	5.34

(*Superior Commercial Club v. Superior W. L. & P. Co.*, 10 Wis. Com. 704, 755.)

RELATION BETWEEN THE NET EARNINGS AND INTEREST CHARGES

AT 6 AND 7 PER CENT, RESPECTIVELY, ON THE COST OF THE PHYSICAL PARTS OF THE PLANT, WHICH COST IS SHOWN BY THE CONSTRUCTION ACCOUNT ON THE BOOKS OF THE COMPANY

Year	Surplus	Deficits	Year	Surplus	Deficits
1891.....	....	\$3,817.61	1900.....	\$306.59	....
1892.....	....	873.81	1901.....	207.29	....
1893.....	....	1,257.80	1902.....	610.18	....
1894.....	\$214.45	....	1903.....	1,860.60	....
1895.....	....	414.56	1904.....	3,030.75	....
1896.....	314.63	....	1905.....	2,801.92	....
1897.....	26.53	....	1906.....	2,963.73	....
1898.....	....	369.41	1907.....	2,697.35	....
1899.....	....	503.04	Total	\$15,034.02	\$7,236.32

(*Hill et al. v. Antigo Water Co.*, 3 Wis. Com. 623, 734.)

MADISON GAS AND ELECTRIC CO.—EARNING VALUE—GAS AND ELECTRIC PLANTS

YEAR	EARNING VALUE JAN. 1	ADDITIONS TO DEPRECIABLE PROPERTY	INCREASE LAND VALUES	DEPRECIATION GAS 4 PER CENT BASIS, ELECTRIC STRAIGHT LINE	INTEREST 8 PER CENT ON VALUE	TOTAL	NET EARNINGS FROM OPERATIONS	VALUE DEC. 31
1896*	\$330,000	\$17,321	\$2,073	\$5,983	\$17,600	\$372,977	\$29,655	\$343,322
1897	343,322	27,212	4,020	9,497	27,466	411,517	53,247	358,270
1898	358,270	17,242	4,020	10,410	28,662	418,604	49,060	369,544
1899	369,544	33,662	4,020	10,998	29,564	447,788	53,267	394,521
1900	394,521	46,879	4,020	12,176	31,562	489,158	57,458	431,700
1901	431,700	81,174	4,020	14,160	34,536	565,590	66,700	498,890
1902	498,890	82,885	4,020	17,114	39,911	642,820	71,108	571,712
1903	571,712	67,003	4,020	20,421	45,737	708,893	63,355	645,538
1904	645,538	31,002	4,020	22,756	51,643	754,959	65,059	689,900
1905	689,900	51,863	4,020	24,086	55,192	825,061	72,367	752,694
1906	752,694	25,844	4,020	26,442	60,216	869,216	86,091	783,125
1907	783,125	90,362	4,020	27,331	62,650	967,488	94,321	873,167
1908	873,167	26,111	....	31,737	69,853	1,000,868	121,328	879,540

*Nine months.

(The details of the foregoing table are discussed in the opinion of the Commission to be found in *State Journal Printing Co. v. Madison Gas and Electric Co.*, 4 Wis. Com. 501, 583.)

These may be unusual illustrations. But they illustrate the truth that losses are scattered through recent as well as early years. This is not peculiar to the utility business. It is true of all industry.

The suggestion has been made that these deficits in operation are just as much a part of the capital, as interest during construction. These gentlemen do not propose to offset interest during construction, if large profits are made during subsequent years. Why not? The reason is simple. They, themselves, recognize a difference between the two. Interest during construction is strictly an investment cost. The end of the construction period can be fairly well located, definitely. It is hardly right to say that these early losses are in the twilight zone; for they are at the beginning, in the morning of the day. They are in the zone of dawn, a sort of November morn affair. You can't see it, but it is there. It is difficult to draw the line between night and day; but there is a difference. It is likewise difficult to place these early preliminary development expenses. In some respects they seem to belong to operating expenses, and otherwise to capital. They cannot belong to both. That invites the grossest kind of high financiering. Operating expense accounts, and capital accounts, should be kept as far apart as possible. Already there is too much juggling back and forth, between the two.

There are a multitude of factors that may occasion losses against which the government should not guarantee immunity. These can be classified generally under inefficient management, and the hazards of the business, and are referred to under innumerable heads such as lack of foresight, extravagance, excessive salaries, building too far ahead for the future, construction of a plant too expensive for the local needs, failure to keep abreast of the times in methods or the purchase of improved machinery, general financial stringency,

panic, the act of God, such as earthquake, unavoidable fire, etc.

Expenditures occasioned by injudicious investment are not to be considered according to the New Jersey Commission. The thought is happily phrased: "Living consumers must not be held in the power of the dead hand stretched forth from the grave of fictitious or injudicious investment." *Gates & Hurlley v. Delaware & Atl. Tel. & Tel. Co.*, 1 N. J. Com. 519, 548.

At any given time when a loss is suffered, some money may have been expended for building up the business for the future, and, at the same time, any one or more of the above factors may have existed. How will it be humanly possible for a person to determine when the latter occasioned the loss, or the cause was improvident management? Modern business methods, the simple necessities of the case, require ordinarily some substantial outlays constantly for the purpose of creating new business. This is properly considered an operating expense, and is so treated in the accounts of public utilities as well as strictly private business enterprises.

These are generally subject only to the attitude, or policy, of the men in charge. No one questions the wisdom of some of these expenditures; but it is customary to pay for the same out of earnings and charge them to operating expenses. Such expenditures become part and parcel of the general operation of the plant. Deficits in operation may or may not be due to instances of overbuilding, excessive salaries, misjudging the needs and demands of public, etc. A competent manager might readily conduct the same advertising campaign, pay all legitimate operating expenses, and have an adequate surplus earning, above capital charges. These are all part of the managerial scheme of those controlling the company. To consider them otherwise, to attempt to make a separation and

to find the cost of possible losses, would be fraught with unending perplexities.

When we decide to embark upon the policy of capitalizing losses, we will be confronted with some serious problems.

One firm may handle a plant with success from the first or second year; while another firm in the same town may meet with reversals and constant losses. How can we tell when a given loss is the result of the vicissitudes of a business, or the incompetency of the manager?

What is a reasonable rate of return one year may be too low or too high ten years later. Four per cent may be a reasonable interest rate one year, and 5 per cent ten years later. The rate on stocks may likewise increase by the same amount, one fourth, or 25 per cent, during a lapse of ten years. Many utility plants, such as waterworks and gas plants, established fifty years ago, had to pay one half, or 50 per cent, more on their bonds than similar companies have to pay today.

If we authorize a company to capitalize its losses and to keep its profits, it means that the public must pay a return on these losses, it means the public bears the loss and the company gets the profit. It is therefore a one-sided proposition; unless, when you increase the capital because of low returns, you reduce the capital when the returns are high.

Now let us see what follows: Here is a company that lacks just \$10,000 of having enough net income to pay a 6 per cent dividend. Shall we authorize the company to capitalize the deficit? If we do later, why not now? We will thereby encourage capital to invest, when capital learns that we are going to guarantee profits. A company is entitled to have stocks and bonds outstanding representing all the property on which they are entitled to a return, so we permit the company to issue the \$10,000 in bonds and stocks, and it is then able to pay its 6 per cent dividends, if the securities are salable. But that shocks you! Some states make that action a penitentiary offense. The arguments in economics, law, good finance and morals, against that action are too long and too familiar to justify repetition. The next year they have an earning of 12 per cent; shall we then reduce the stocks and bonds by 6 per cent? The confusion is too charming. We need not pursue it further.

Suppose instead of permitting them to issue stocks and bonds, we simply say that any year when you test the adequacy of your returns, you are entitled to increase the value by the amount of your losses and decrease it by the amount of your extra gains.

Then the task is to analyze your past financial history. Are you going to wade through the operating

expense account of each year for twenty or thirty years past? You would have to acquaint yourself with the circumstances of the business, the current standards of that year, the occasion for this expenditure and for that. Or otherwise, you would have to accept the expense account as it stands and that is the usual result in the practical application of this method.

The state thereby becomes for all practical purposes a guarantor of the profits in that business.

A state commission has held that a certain company was entitled to an 8 per cent return on the investment in the property, in addition to an allowance for depreciation, sufficient to replace the entire property and all its parts as soon as they had lived their natural life; also an 8 per cent return on all increases in land values; also an 8 per cent return upon all deficits or failures to meet the foregoing requirements. In other words, the company was entitled to a cumulative, compound interest rate of 8 per cent, and was also guaranteed against competition.

If the policy of permitting rates to a monopoly concern, which would yield returns of that character should ever become the recognized standard in the United States, such securities would completely outclass the finest gilt-edged cumulative preferred railroad stocks in the country, securities which our investors, the nation over, are willing to purchase on a $4\frac{1}{2}$ per cent or 5 per cent basis.

It is not strange that later we find the Wisconsin Commission with a candor and honesty of purpose sufficient to make a change in that rate of return. In 1911, in the application of the La Crosse Gas and Electric Co., the Commission said:

"It seems quite clear that, when a 'going value' or 'earning value' determination is made, the capitalization of unearned sums for depreciation and interest and the unquestioning acceptance of the operating expense, amount to an elimination of the risks of the business and that, therefore, little, if anything, need be allowed for profit above a bare interest rate on the investment during those years." *In re-application LaCrosse Gas & Electric Co.*, 8 Wis. Com. 138, 181 (1911).

There are several interesting phases of this method of capitalizing deficits, the losses of certain years being offset by the profits of other years. The value decreases as the profit increases; or, on the other hand, the value increases as the profit decreases. The greater the deficit, the greater the value. In other words, a deficit creates value. Unless we are careful, we will lose ourselves in a quagmire of contradictions and economic absurdities and impossibilities.

If the losses of one decade are capitalized, should we not capitalize the losses of the next; if the losses of one generation are capitalized, should we not also

capitalize the losses of another generation, and of the next, and so on, and on, in the future, forever? As business goes on, in the course of a century we would capitalize in the railroad industry, or for your water plant in your local community that has probably already been there a half century, the losses of three generations, the losses of ten decades of business.

Should not each generation, and each decade bear its own losses? After the industry has once been placed on its feet, when it has once been placed on a paying basis, ought it not be required to take care of itself?

The modern theory that we should capitalize losses is a new and unheard of venture out into a realm of the unknown, a realm of uncertainty and confusion, where we must abandon the basic principles of public policy and finance, that have been guiding us in the past.

What each generation must be willing to pay is a reasonable return on the fair value of the property devoted to the public service, at that time.

If we permit the capitalization of losses, at no future time will the value of the property then being used by the public be the basis for computing the adequacy of returns.

LOSSES OFFSET BY PROFITS IN THE PAST

There is little difference of opinion in any of the cases upon the proposition that if a company suffers losses during one or a few years, either in the early or later portion of its history; and, afterwards, in addition to a reasonable return, that loss has been recouped to the company, it cannot legitimately ask for the same to be capitalized or to be returned to it again. (*Kings County Lighting Co. v. Willcox*, 210 N. Y. 479.)

The only exception to this proposition which we have found, is the decision of the New Jersey Commission in the Public Service Gas Case, *supra*.

Dr. Whitten, in his able work on Valuation, suggests that the New Jersey Commission may hold differently as to rates charged under regulation. We cannot adopt the suggestion, as a deduction from the decision. Of course, we cannot tell what the Commission will do. The decision referred to rests on a doctrine of estoppel, that those rates may have been too high, and it may be "a subject of regret that regulation was so long deferred; but deferred regulation is no excuse for refusing at present to allow a fair return upon what is the lawful property of the company." (See *In re Public Service Gas Co.*, 1 N. J. Rep. 433, 475.) If deferred regulation works an estoppel, certainly regulation existing and permitting high rates would be a still greater estoppel.

A different thought enters into a more recent decision by the same Commission:

"In the light of these two general principles, it appears just and reasonable that a fair present day estimate of the capital necessarily and judiciously sunk in establishing the business and not thereafter recouped from revenue should enter as an element into the base upon which a fair return should be allowed." (*Gately & Hurley et al. v. D. & A. T. & T. Co.*, 14 Com. Leaf. 39, 68.)

COMPARATIVE PLANT METHOD

Mr. Benezette Williams, in a letter to the American Water Works Association (published in connection with Mr. Alvord's paper on Going Value), in June, 1909, stated that the first rate case wherein allowance was made for going value was the Dubuque Waterworks appraisal. At that time there was clearly stated the basic principles of the comparative plant method of arriving at going value. This method contemplates a hypothetical plant created at the time of the valuation, and the value is measured by the sum of the yearly amounts of revenue reduced to present worth, which the original plant in operation produces in excess of what the new plant can be made to produce, between the time of purchase and that time in the future, when the revenues of the two works become equal.¹

This is worthy of consideration. Let us assume the present telephone plant in Philadelphia eliminated, and a new plant finished, completed in every respect, connected with every home in this city which is now connected by the present plant, and all the people educated in the use of telephones. It would not take long to place that plant on a paying basis. The people would probably force it on to a paying basis before the first month was concluded. There would be no preliminary development cost, or going value.²

On the other hand, if we assume the present telephone plant in Philadelphia eliminated, and no person knowing what a telephone is, there would probably be an extended development period. But who would be able to tell how long it would take to create the demand? How would we go about it to guess the period before the plant would be on a paying basis? Everything in your computation would depend upon your assumption. You could double the going value, or split it in the middle. During the development period you would certainly build your plant in harmony with the local demand. There would be no occasion for the present great system till the people wanted it. That would be the situation in practical business. Whether it would

¹ See paper above referred to published in pamphlet form, at page 247; also *Beloit v. Beloit Water, Gas & Electric Co.*, 7 Wis. 187.

² See comments of Professor Bemis in his report on the telephone rates of the Chicago Telephone Co., under date of October 25, 1912.

or not of castles in the air, of hypothetical phantom plants is another question. If we assume the impossible, the impractical, we are basing regulation on false assumptions. And who is there who could say that the new plant, built on small proportions and enlarged as the business justified, would not pay from the start, or would not make up the early losses within the first few years of its life?

The objection to the so-called comparative plant method can be briefly summarized under two heads:

1st. It involves many assumptions, such as the time limit, the principle of which is the time that it would take a new plant to produce an income equal to the original plant; the sum of money arrived at depending entirely upon the character of the assumption described.

2d. The computation involves net income, as almost a controlling factor. If the earnings are produced by excessive rates they will be large and consequently require a longer time for the new plant to duplicate itself. If the rates are low, the earnings are small and the opposite result will follow.

A computation that must be based upon the assumption that the rates are reasonable, is of very little value in an investigation of the reasonableness of the said rates.¹

Neither the blanket theoretical percentage allowance, nor the capitalization of net deficits throughout the life of a plant, nor the comparative plant method, has found favor in the great majority of decisions by either courts or commissions. Neither of these methods has had any weight in the decisions of the lower courts, or of the Supreme Court, in either of the cases involving these issues, which have been carried up to the Supreme Court of the United States.

CONCLUSIONS

In the absence of actual proof of early losses which have not been recouped in later years, nothing should be allowed for the same.

Blanket, theoretical estimates on the comparative plant, or other speculative basis, should not be adopted.

Only losses occurring during the first few years of an enterprise, while it is in the experimental stage, and only such losses as are strictly a necessary part of the cost of placing the enterprise on a paying basis, and only such losses for which the company has never been compensated, should be considered. Subsequent losses should not be capitalized or allowed for in the rate of return. Ordinarily, no such preliminary development costs exist for which compensation has not been

received. It is doubtful if the allowance should ever be made. We do not make law for special cases.

Whether the preliminary development costs are cared for out of the rate of return, or added to the value upon which the utility is entitled to demand a return, in either case, I believe the action of the administrative tribunal will be sustained by the courts, if it be properly presented, and carried to the court of last resort.

A given unit in a utility plant is worth more as a part of a property in successful operation than when by itself, and not so connected and used. The courts have held that the cost of reproduction new, less depreciation, and including reasonable, but not excessive, sums for overhead charges, makes ample allowance for the value of a property in successful operation, in the absence of any actual proof of unrecouped losses which were necessarily incurred during the early experimental stage, while the property was being placed upon a paying basis.

Personally, I do not approve of the cost of reproduction, new, less depreciation, as *the basis* for rate making purposes. I do not believe that the courts have ever adopted it as such, and I do not believe that they ever will do so. On the other hand, I do not believe that the courts have ever adopted, or ever will adopt, original cost as *the basis*. In the San Diego and Minnesota Rate Cases, the Supreme Court plainly stated why that was so. Both factors are important.

"Fair value" is the basis. Our friends, the devotees of the reproductive theory, have adopted that term, and then calmly proceeded to establish, so far as possible, the cost of reproduction as the controlling factor. Is there not a lesson here for you to learn? Results are what count. If the Supreme Court should declare that two plus two make five, or that lying is morally right, of course we would never accept their dicta. If the Supreme Court should declare that four-legged contrivance, upon which you are seated, to be a table, instead of a chair, that might be difficult to accept. We might try to get them to change their notion. I might try three or four times; and then, if they still persisted, I would say, "all right, that is a table; but this thing that I am accustomed to writing on must be called something else; call it a chair, if you desire, but you will have to call it something else." And I would succeed. Remember, words and phrases should be our servants, not our masters. We must work along lines that will bring results.

Fair value is only in the process of being defined. It is up to you and me to help see that proper weight be given to the various elements entering into "fair value" as the basis.

The Supreme Court has never stated that the cost of reproduction, new, is synonymous with present fair

¹ See *Mayhew v. Kings County Lighting Co.*, 2 N. Y. Com., 1st District 659; *Spring Valley Waterworks v. San Francisco*, 192 Fed. 137; *Hill et al. v. Antigo*, 3 Wis. Com. 623.

value. Concerning the absurd extremes to which that hypothesis would lead us, the court stated, in the Minnesota Rate Case:

"It is manifest that an attempt to estimate what would be the actual cost of acquiring the right-of-way, if the railroad were not there, is to indulge in mere speculation. The assumption of its non-existence, and at the same time, that the values that rest upon it remain unchanged, is impossible and cannot be entertained." Minnesota Rate Cases, 210 U. S., 352, 452.

Further, in regard to this whole proposition, the court said:

"The cost-of-reproduction method is of service in ascertaining the present value of the plant, when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty. But it does not justify the acceptance of results which depend upon mere conjecture." (ib.)

The court has already been persuaded to reject the cost of reproduction in several important portions of an appraisal. Perhaps the most important achievement of that character, up to the present moment, was the definite, positive position taken as to land values in the Minnesota Rate Case. Second only to that in importance is the evolution of these doctrines which we have been discussing in this paper, and the final rejection in the Des Moines Gas Case of the reproduction cost theory as applied to "going value" in the appraisal of a public utility for rate making purposes.

It is my belief that we should center our efforts on the following: First, that exhaustive, accurate and reliable proof be secured as to what can fairly be called actual or estimated original cost; second, that the cost of reproduction be honestly and fairly arrived at, in all its parts, so far as it is humanly possible; and lastly, and most important of all, that the facts and arguments should be assembled by men of known capacity, showing clearly and conclusively the relative importance of these two factors, original cost, and reproduction cost, in the determination of values for rate making pur-

poses; for, I believe that original cost is the most important factor to be considered in the appraisal of a public utility property for rate making purposes; and, when effectively presented, that will be the conclusion of our court of last resort, a tribunal for which I have the most profound regard, a tribunal without a peer in the judicial history of the human race.

Concerning this subject of going value, I submit two queries upon which I have not made up my own mind, finally. First, should loss occasioned by competition be considered?¹ Second: After a number of years free from regulative interference, should not a company be estopped from claiming allowance for early losses; is not that, in itself, sufficient proof of mistakes in construction, or management, or an evidence of the usual hazard in the business?

Regardless of my conclusions on these propositions as to what is the correct doctrine, I believe the following states the law of today, as established by the weight of authority:

Justice to the owners, and the best interests of the public, demand that legitimate expenses for which a company has not been compensated, expenses necessary and actually incurred in the original construction and establishment upon a paying basis of a public utility, reasonably necessary for public use, prudently constructed, and wisely managed, should either be returned to the owners, or should constitute a part of the value upon which the said owners are entitled to an adequate return. I believe there is money awaiting investment on reasonable terms, where that, and nothing more, is assured.

¹ See *Bachrach v. Consolidated Gas, Electric Light & Power Co. of Baltimore*, 14 Com. Leaf. 154, January 13, 1913. Losses occasioned by competition may be considered an incident to the business which was, or should have been, anticipated by men embarking in such an enterprise. It is doubtful whether it is fair to ask the consumer of today to bear the burden of that competition.

(NOTE AS TO ABBREVIATIONS: Com. Leaf. refers to the publications of commission decisions by the American Telephone & Telegraph Co.; the various state railroad and public service commission reports are referred to simply by the name of the state and the abbreviation, Com.)

DISCUSSION

BY HON. JOSEPH L. BRISTOW

Chairman of the Kansas Public Utilities Commission

I desire to say that I came here to learn. This is a new work for me. While I have devoted some time in the past to studying a number of the subjects under discussion, and am very much interested in their solution, yet I was not expecting to address this body at this time. There have been one or two suggestions made that have been of special

interest to me. One was offered by Mr. Wood of New York,¹ when he suggested that high enough rates should be provided to give liberal returns upon the capital, so as to invite the investment of additional capital in these utilities that they may be enlarged and able to render greater public service.

¹ See p. 171.

I think we all agree on that proposition, but when you consider the various elements in the operation of public utilities that lead to gain or loss, we certainly find that there are other considerations than rates that are of paramount importance. The depreciation in the value of the securities of public utilities in the United States during recent years has not been so much because of the inadequacy of the rates as of other matters.

The misuse of the funds by those in control of many of such utilities has brought disaster to them and destroyed their credit. It is of the greatest importance that regulatory bodies should be given authority to, in some way, enforce honesty in the management of these concerns so that their credit may be restored.

So far as the railroads are concerned, their credit has been destroyed, to a great extent, by the management of men in control of their finances. Indeed, it has been found by the Interstate Commerce Commission recently that one of the great railway systems that is now in the hands of a receiver, was placed there when its gross receipts were greater than during any other year in its history. What this company needed was not higher rates, but honest management. So, gentlemen, it seems to me that the other questions which affect the financial standing of these public service corporations are of equal or greater importance than the rates they are permitted to charge.

I have been very much interested in the discussion of the valuation subject. We had a case before our commission out in Kansas the other day; and an able lawyer who appeared before the commission, who was at one time a member of the United States Senate, argued with great force that the losses which the corporation had incurred during its operation, should be added to the capital upon which it was permitted to earn returns.

In another case it has been argued with great earnestness that any favorable conditions, such as location, that were of benefit to a company and enabled it to earn good returns, were elements of value that should be taken into consideration in fixing rates.

That is, if one road in the same territory, because of more favorable location, makes handsome profits, then it is entitled to take into consideration the value of such location in fixing a value for rate making. In the other case, if its location is bad and because of that or other facts it is operated at a loss, such loss entitles the road to increased rates.

This appears to me to be a scheme for catching them "comin' and goin'."

Now I am not expert enough, yet, to determine just where to draw the proper line ultimately, in ascertaining the value of a property upon which the commission is to fix rates. That is destined to become a question of great economic and political controversy.

I was very favorably impressed, indeed, with the very eloquent and, to my mind, sound remarks made by our chairman this afternoon.¹ It seemed to me that he outlined in a very clear manner a basis that would be equitable and just. And I am disposed to accept it, giving peculiar and particular emphasis upon the fact that an honest, efficient and economic administration of the corporation's affairs shall always be required; that the investments in such properties shall be wisely made. Otherwise, you are giving a premium upon wastefulness and unwise investments, and not imposing a penalty upon extravagance, dishonesty and improvidence in operation. I feel that such conferences as this in which we are now engaged will be of great value to the country.

¹See p. 137.

GOING VALUE IN PURCHASE VS. RATE CASES

By A. M. Fox

Former Instructor, Engineering Department, University of Michigan; Assistant Engineer, Telephone Appraisal, City of Detroit

This discussion is intended to deal primarily with going value as an element of fair value in rate cases in contradistinction to purchase cases.

Public utilities contain property of value which does not show in the inventory of the property. These intangible elements are the source of great controversy and account for the glaring discrepancies that apparently exist between valuations of the same property by different appraisers. The proper treatment of intangible elements is indeed one of the most difficult and puzzling questions confronting the appraiser in ascertaining the value of a property for rate making purposes. The great confusion of thought upon this subject arises from the failure to differentiate carefully between the several elements of fair value for rate and purchase cases as applied to intangible capital.

It is hardly necessary to remind this audience that the first appraisals were taken in connection with the purchase

of public utilities, originating in the purchase of waterworks. Those for rate making purposes are of a comparatively more recent date. It is natural, therefore, that the principles and appraisal bases established in purchase cases should have been carried over into rate cases, with only slight modifications. This is especially true of the intangible values of public service utilities. Careful analysis will reveal the fact that equity and justice demand that different treatment be accorded going value for purchase and rate purposes.

The intangible elements of a utility which do not appear in an inventory of a property, but which are nevertheless important elements of value are the following:

1. Undistributed overhead or general expenses,
2. Cost of developing the organization,
3. Going value.

Of these, the undistributed or overhead expenses, which represent merely directive labor, and the cost of developing

the organization, an essential part of every utility, are considered to be proper charges to the capital account, and ought, really, to be included in the physical value in both rate and purchase cases. In fact, engineers do as a rule include these in appraisals. When the proper allowances are made for these in the ascertainment of fair value for rate making purposes, it is believed that no consideration need be given to going value, which represents an increment of value of a property resulting from its earning capacity, earning capacity being the matter at issue in a rate case and therefore to be excluded in determining the base.

Going value has been variously defined to include all of the intangible elements. This tendency and condition although conducive to pressing the claims and self-interest of advocates may be responsible for some of the careless thinking which tends to befog an already difficult subject.

Going value in the monopolistic and regulative field corresponds to good will in the competitive field. Going value is the enhancement in the value of the physical property of a public utility due to the business that the concern has or is doing.

A brief consideration of the ethical differences between rate and purchase cases will help to guide the appraiser to a clear and fair appraisal basis of going value for these two purposes.

For the greater part, utilities must pass through an experimental stage, which stage is an expensive one. A property which has passed through the unfavorable periods of its existence, and has gained its balance is unquestionably worth more to the buyer than the one which has yet to pass through such experience and establish itself. The careful purchaser is willing to forego the possibilities of greater returns from an uncertain property, for the steady certain income of an established business. It is undeniably true that, in a purchase case, the property is worth more because of the fact that it is established and earning a fair return, than one which is not so fortunate. In purchase cases, there is clearly an element of going value to be considered in the ascertainment of the fair present value. The intangible property in such cases consists of a value inherent in the utility due to the fact that the plant is enlivened by successful operation and hence is more valuable than the bare bones of the physical property. It is well to recognize that value is given to a property either by reason of the fact that it is an instrument for earning profit, or that it does earn profit, or gives promise of profit. The actual investment of capital in a new plant is made with the expectation of earnings. In fact, in an established business, in a purchase case, going value is measured by the extent of these earnings.

For rate purposes, however, the vital question is not the return that the property is capable of earning but the actual investment in the property used and useful in serving the

public. In purchase cases the important consideration in evaluating going value is the earning capacity of the utility. In a rate case, on the other hand, the best guidance in all controversial points is an ethical consideration of the actual sacrifices of the investors, that is, by the investment in the utility. Unfortunately the investment can rarely be determined.

The fundamental basis in a rate case is comparatively a simple one. The public is entitled to efficient service at reasonable rates. The utility, on the other hand, is entitled to a fair return upon the investment or upon the actual value of the property used and useful in serving the public. To base any estimates of value in rate cases upon earnings is to argue in a vicious circle.

We are not so much concerned with the methods employed in evaluating going value as we are in the underlying principles involved. Going value, no matter how measured, whether as the cost of developing an income as gauged by the early losses, or calculated upon a comparative basis, or upon hypothetical assumptions, or by any other method, is not a legitimate, fair, or reasonable addition in the ascertainment of fair value for rate purposes, going value being a function of earnings, which are the backbone of the rate case and upon which the entire rate case is centered. Going value should, however, receive consideration in purchase cases.

It is an open question whether equity and justice require the inclusion of any going value where there is no evidence of an actual sacrifice incurred by the owners in developing the business. All arguments in favor of going value are clearly applicable to purchase cases. It is believed that it would be equitable and fair to the parties involved in an appraisal if all considerations of going value were left for purchase cases, and only those elements of intangible capital which are clearly involved in the cost of constructing and acquiring the physical property were included in the present value for rate purposes.

Two arguments may be urged for including going value in a rate case. The first of these, the early losses suffered during the first years of operation, has no force unless a satisfactory audit and study of the history, quality of service, and the management of the company are possible. These facts are absolutely essential in order to assure the existence of such losses, and further, that these losses have not already been compensated for.

Nor can it be urged that an allowance for going value is essential in order that cognizance may be taken of efficiency in management, for the best legitimate reward and encouragement for efficient and successful management in this commercial age is high salaries, and not an allowance for going value to the corporate owners.

DISCUSSION

By WILLIAM J. HAGENAH

Public Utility Statistician, Chicago, Illinois

I have listened with a great deal of interest to the paper read by Mr. Thorne. He has had so wide an experience in the field of corporation regulation that any expression from him on this subject must be based not only on the results of academic study, but also on his personal knowledge of many corporations operating under greatly varying conditions. The paper is also important because of the official position of its author. Mr. Thorne concludes, if I understand him correctly, that going value is a property right and must be recognized in rate cases, and he would arrive at the measure of such value by a study of the operating records of the company to show the losses which were sustained in building up the business, such losses, however, to be confined to the early years of the venture.

In so far as Mr. Thorne has stated the justice and necessity of an allowance for going value, I am entirely in accord with him. I believe that such an allowance is necessary in most cases and that equity alone, if no other conditions were present, would require such provision. I also agree with him as to the course of analytical study to be pursued in arriving at the measure of such an allowance where the books are available. I do not agree with him in the conclusion that the allowance for going value as determined from a study of the books and records should be confined to what the facts show during only the early and necessarily experimental years of a company's business. A study of the conditions which have prevailed in most of our large cities will show that this view of going value is entirely too narrow and to adopt Mr. Thorne's conclusion, as a general rule, would be unwarranted and unfortunate from the standpoint of both the public and the investors in each case. I believe that all the conditions which have affected the company's investment and operations should be carefully analyzed and from such a record, in which the factors which have played an important part in the upbuilding of the particular company are shown in their true proportion, a commission should arrive at what is proper in each case, giving to each fact and item of cost such weight as from a study of the problem in its entirety seems just. While there are instances where the application of Mr. Thorne's conclusion would work no injustice, in the great majority of cases the losses which have been the most expensive and the most discouraging have come long after the initial operating period. The time as to which the loss occurred is not so important as the character of such loss. Each case should be decided on its own merits after a study of all the facts.

There are two general reasons making it necessary to recognize going value. First, because of the nature of a public utility, and secondly, because of the economic forces which are at work in this field. To base the return to the investors on the appraised value of the physical plant alone would for these reasons be clearly unjust in a great many cases. The public utility is a monopoly and subject to public regula-

tion. It is limited to a reasonable return on the fair value of its property. It is compelled at all times to give adequate and efficient service and to make extensions to its plant even though such extensions will not be immediately remunerative. The issuance of its securities is likewise subject to public approval. An investment once made is fixed for all time and there is no industry, the success or failure of which is more inseparably connected with the growth or decline of the community served. For the right to regulate such properties, the public should recognize the obligation to protect them. If the utility is at all times limited to a reasonable return, it will never be able to overcome unavoidable losses unless they are considered in some form of going value, and this is true whether such losses were incurred in its second year or twentieth year of operation. The test is whether such loss had to be assumed by the company in the course of its duty to stand by its service obligations to the public. If it was so incurred, the public at this time cannot justly ask the stockholder to bear all of such loss.

Further, we are living in an age of great increases in the volume of gold, which results in a great increase in the general level of prices. Every year and almost every month the index figures show new high records for commodity prices. Certain classes of construction and operating supplies have increased in cost from 20 per cent to 60 per cent since 1895 and these price advances have been equalled in the rise in wages for many classes of labor. These advancing levels have inaugurated a period of great public and private extravagance. Our cities have grown more rapidly during the last twenty years than at any other time in the country's history. City debts have doubled and trebled and in some cases increased nearly fivefold. Former sources of municipal revenue have been proved inadequate and new sources have been found necessary. Old forms of taxes have been increased and new assessments are frequently made and variously called street maintenance taxes, paving taxes, franchise taxes, gross earnings taxes, etc. Private industries are able to shift such taxes and also the rise in prices and wages, but utilities cannot do so. They are ground between the upper stone of advancing commodity prices and wages and the nether stone of the depreciating purchasing power of their dollar of income. It requires no prophet to see that the time is coming when many of our utilities will be seeking relief from legislative bodies because of these economic forces which are so relentlessly at work. These are factors which you must consider in some form when you discuss rate making bases and not confine your analysis to present-day reproduction costs and actual cash investments. They may well be considered as having a bearing on the allowance for going value.

I think Mr. Thorne ridiculed in general the idea of losses measuring the going value of a business. He is right, if we accept his limited definition of going value. Of course,

losses do not make *value*. They do, however, measure *costs*, and where such losses were unavoidable and were incurred in the carrying out of the company's business obligations they are costs which commissions should consider in arriving at fair rate making bases. I will not quarrel as to terminology. We may call this subject "going value," "going cost" or "cost of establishing the business," but in the broad view of public utility regulation we are talking pretty much about the same thing, which is, that element of value over and above the appraised physical plant alone. Accepting the broadest definition, the allowance for going value may be predicated on past losses or costs, or it may even be a recognition of the efficiency and skill of the management in having avoided losses as compared with another company not so fortunate.

The limitation of going value to the early years of each company is wrong in principle and contrary to fact. In the first place, the losses incurred in the early years by many of the companies, when expressed in terms of present day investments in those same properties, are almost negligible. The real losses as a rule occur at a much later date. The Chicago Telephone Company has a present investment of over \$55,000,000. After six years of operation its investment was less than \$700,000. If all this were called going value, it would be only $1\frac{1}{2}$ per cent of the present investment. As late as 1894 the total investment in the Cleveland electric properties was only about 3 per cent of the present investment. The Portland Railway, Light & Power Company has a present value of over \$50,000,000. Its investment after six years of operation was only \$2,600,000, and yet its records show that it has failed to earn an average annual reasonable return by over \$5,000,000. There are some companies which may receive all they are justly entitled to under Mr. Thorne's rule, but in most cases, especially in our large cities, his rule would not meet the situation.

I can see three distinct and, to my mind, powerful reasons why the study of the going value should be extended over the entire history of the company under investigation. First, the tremendous and continuing growth of many of our cities has made it impossible for the many utilities in such centers to earn a reasonable return on their true investment. Lengthy extensions of street railways, gas mains, or pole lines have been made necessary by public sentiment far in advance of actual needs or promise of early profit.

Go to the outskirts or suburban territory of any large city and you will see going value in the making. You will find many miles of utility lines with very few customers per unit of investment, but this same investment is bringing people out of the tenement districts to homes where light, air and gardens are possible. When this territory fills up to a profitable basis, the lines will long since have been extended into other and still newer fields. The sociological benefits resulting from such extensions deserve some recognition, especially when it is remembered that it costs the city nothing to order such extensions.

In many cases these plant extensions have represented nearly a total loss, failing to earn even maintenance and

depreciation charges for a number of years, which loss must be deducted from the earnings of the more profitable lines to the extent that no real profit was possible on the business as a whole. I know of one company with a cash investment in physical plant of \$39,000,000 made over a period of twenty-five years, but of this amount \$26,000,000 was invested in additions during the last eight years, and in spite of the great growth of the business it cannot earn an average of 6 per cent on its actual cash investment.

Consider such cities as Los Angeles, Portland, Seattle, Spokane and Denver, where the population has on an average doubled every ten years during the last thirty years. Seattle and Portland each have a city area as large as Detroit and Baltimore combined, but a population less than half of either of such eastern cities. Their service development is as good as that in the eastern cities but they have far less traffic to support it. Also, they have no slum districts and no congestion of population in any form. I might mention more instances, and some here in the East, but time forbids. What I have called attention to, however, should show the error of limiting the going value period to an arbitrary number of years.

Again, consider the enormous losses classified as depreciation resulting from inadequacy, obsolescence, progress in the art, etc. These losses never made themselves felt in the early years of the utility. I remember as a child visiting what was then called one of the largest central stations in the world. Its dimensions were not over thirty feet square. All its machinery would not fill one modern auto-truck. Now recall the plants of fifteen years ago with their crude and clumsy machinery and lines of wire which darkened the principal business streets. Consider also the telephone equipment and the type of street cars of that day. The mighty changes which have occurred help to spell going value in many cases. If the cost of such changes has been amortized, by subsequent profits, well and good. When they have not been amortized, should not the public rightfully regard some fair portion of such losses as a part of the cost of building up the present highly efficient utility plants?

Nor is that all. Stop and consider the tremendous losses which competition has occasioned. The right to regulate should carry with it a duty to protect. Yet in many of our cities, as soon as a utility was firmly established and its business showing profits a competing company was enfranchised, streets were torn up and rate wars ensued until one company purchased the other. This settlement invariably loaded some purely duplicate property onto the remaining company, which property was a complete loss, as well as the earnings lost in the rate wars. This happened not once but many times in most of our large cities. Where a present utility is the outgrowth of a merger of a number of plants, of which one of such companies will the going value analysis be made under Mr. Thorne's rule? The Chicago gas utility is the result of a combination of seven companies and in some cases there are over a dozen gas mains in a single street in that city. Detroit has had four competing telephone systems and there is enough telephone duct in some streets to meet

every future demand which can now be anticipated. This condition is even more marked in Portland, where there have been over fifty separate electric lighting and street railway companies, and only in 1911 was another constructed with an investment of over \$8,000,000. These duplicate plants were not needed, for adequate service was being supplied by the existing company. When public sentiment demands competition, which is contrary to every idea of a natural monopoly and public regulation, it would seem but a matter of simple justice that some weight should be given in rate cases to losses which have been occasioned in this manner.

Closely allied to this subject are the losses due to consolidation of the individual plants in many cities into one great well-balanced operating company. In hundreds of instances in this country the electric plants operating in small cities were giving service only during the hours of darkness. Wires in certain streets were often attached to trees and every storm interrupted the service. These plants are rapidly being dismantled and replaced by modern distribution systems supplied from high tension transmission lines leading from large and economical central stations. As instances of this kind I need only mention the Pacific Gas and Electric Company, The Montana Power Company, the Pacific Power & Light Company and the Texas Power & Light Company. Some of these companies serve from fifty to over a hundred separate cities and villages. To limit the determination of going value to the initial years of each company in each separate city means little in these cases. It is altogether impracticable. Mr. Thorne's rule does not fit the facts as they exist today.

When Mr. Thorne criticizes some of the claims for going value I am inclined to agree with him. There have been much loose thinking and still more loose testifying on this subject. But I do not believe that this condition is an argument against an exhaustive study of the subject in order that we may arrive at our conclusions from a proper understanding of the entire problem. I think corporations have overlooked the necessity for more facts and less general assertions in dealing with this item of value. I have no sympathy with the engineer who counts every pole, cross arm and insulator, every bolt and board, studies soil conditions, freight rates and accident insurance rates and then adds in a more or less arbitrary manner 5 per cent for engineering, 6 per cent for interest, 5 per cent for contingencies, 3 per cent for insurance and taxes, etc., and then another 15, 20 or even 30 per cent for going value. That is not making a fair appraisal. We might as well, if we wished the measure of a hundred yards, mark off the first fifty yards with a temperature adjusted steel tape and then pace the rest. When a subject is difficult of accurate determination, it calls for all the more study. If a company is entitled to going value, it can generally prove that fact by evidence satisfactory to a court or commission.

I do not altogether agree with Mr. Thorne in his conclusions regarding appraisal engineers. My own experience has given me a different impression. That there have been and still are some exceedingly liberal estimators is of course

true. It is an easy matter to make a claim, and that applies to both corporations and cities. That condition, however, is true of every profession, even among lawyers. I have represented both cities and corporations in many rate cases in every part of the United States, and I find that it is seldom that a physical appraisal varies over 10 per cent. Five per cent differences are not uncommon and I recall one case where in an appraisal of over \$5,000,000 the difference between the parties was less than one half of 1 per cent. I think we should hear more of the successful appraisals and less of the extremes, or at least not base a general rule on the extreme cases. An analysis of such cases will generally show that the wide difference is confined to one or two items, which one side may disallow altogether and for reasons open to argument and possibly calling for judicial determination. We are also learning more each year about making appraisals and that helps to eliminate the extremists.

As I listened to the papers of yesterday and today I rather gathered the impression that it was easy for us to become too academic and that in our search for absolute accuracy in small details we might lose sight of our real objective,—*fair value and reasonable returns*. We are all pretty well agreed as to general principles. The bigger problem is the application of such principles to the facts and difficulties as they arise in each case. The law on this subject is fairly well settled and each year sees more difficulties cleared away. The legislatures have expressed the policy of the several states with respect to public utilities and have created legislative bodies or commissions to carry out these policies. Throughout the statutes and the decisions we see instructions and duties which can be discharged only through the exercise of a broad judgment expressed in a spirit of fairness and predicated on a record showing all the facts which it is possible to produce. Some of the items under discussion here and on which opinions vary widely are of such slight consequence in their practical application as to be without material effect on the question of fair value and reasonable rates.

Rate making is far from being an exact science. If regulation and the finding of fair value involved nothing but engineering work, the commissions should consist only of construction engineers. If the work involved only balance sheets and profit and loss statements with no right to eliminate items or to make adjustments, the commission should be made up of certified public accountants. If this work called for only the listing of items and the application of percentages, the commissions might be made up of men who are experts on the adding machine and clever with their pencils. But regulation means more than this. It requires not only engineering and accounting skill, but a knowledge of political economy as well, ability to correlate all the facts and to harmonize the various forces, to see in each case something of the history of the public utility business, an appreciation of its present position and its future prospects, and from the evidence showing the facts with respect to each point as clearly as it is possible to do so, to form a judicial opinion as to what is just and proper in the premises today. The fair value so determined may be greater or less than the engineers' reproduction cost and depreciated value estimates,

it may be greater or less than the accountants' conclusion as to the actual cash cost, and it may or may not contain a substantial allowance for going value. It will, however, contain a recognition for every element of value which can be shown to be proper and that will include going value,

based not on assumptions nor computed over an arbitrarily limited period of time, but rather on all the facts as they have actually influenced the operations of each specific company and in the measure which today seems equitable to both the public and the investors.

OPEN DISCUSSION

MR. THORNE:

I have a page here, copied from a report of the Wisconsin Commission, which shows the Superior Water, Gas & Electric Company earned in 1890 1.7 per cent; 1896, 2 per cent; 1897 less than 2 per cent; 1898, 5 per cent, and the next two years a total deficit. Did regulation have anything to do with this deficit?

MR. HAGENAH:

I don't think that regulation caused the deficiency. I think that regulation gave a greater stability to this plant than it ever had before. Wisconsin began the regulation of utilities in 1907.

MR. THORNE:

So that it did not have anything to do with those deficits back of 1907, did it?

MR. HAGENAH:

Regulation never caused the deficits.

MR. THORNE:

And yet you desire the authority to make good those previous losses?

MR. HAGENAH:

In the case of Superior and Duluth, I think it entirely proper that a public service commission should consider the conditions which have prevailed in those cities and which doubtless account for the deficits which you mention. I am sure you know that Duluth and Superior were the centers of a great boom about twenty-five years ago. Construction and improvements had been made anticipating a city of 100,000 population. This boom collapsed and for eight or nine years these cities were as depressed as it is possible to imagine. The population decreased decidedly and many business establishments, both large and small, removed from these cities entirely. Duluth and Superior are now prosperous cities with an aggregate population of approximately 150,000. Their industries are prosperous and are growing rapidly. Since the public utilities represent fixed investments and could not shift to meet the depressed conditions as private concerns did, I think that now in the prosperous days of these cities, the public can well afford to make some provision for the losses which the utilities sustained. It might not be fair to provide for the entire losses, but I do think that in making the appraisals for rate making purposes some allowance should be made for the losses which the

utilities could not avoid and which to a large extent individuals and private enterprises were able to avoid.

Large profits were made out of real estate during the boom years and the value which was created in lots then sold was in large part due to the many miles of public utility facilities which were constructed. The profit resulting to the land owners was such that I believe they could well afford to give some consideration to the interests of the utility.

MR. THORNE:

The people who lost money during this time of course will not be protected by the public. Neither are all the people in Duluth and Superior fortunate enough to be land owners.

MR. HAGENAH:

What you say is true. In the adjustment of conditions, some classes may in the first instance be much more fortunate, but those matters generally adjust themselves in the course of a few years when prosperity becomes to some extent distributed.

ROBERT L. HALE, *Lecturer in Economics, Columbia University:*

Mr. Hagenah implied that the people who would benefit in the city of Superior by the reduction of rates are all of them land owners who have received unearned increments. Is he not aware of the fact that probably a large majority of the people in any large city are not owners of property and have not benefited by the increased realty values?

MR. HAGENAH:

You are correct in stating that many of the people do not own property, but I believe that on a return of prosperous conditions their interests are benefited as well as those of the land owners. We could discuss this for a long time in an academic way. From a practical standpoint a fair provision for the losses incurred would probably not be a burden to any one. All I am arguing for is that we cease to take a narrow and restricted view of utilities and of going value. I think we should pay more attention to the practical conditions as they are found in an analysis of the properties themselves and the conditions under which they were developed.

JOHN BAUER, *Assistant Professor of Economics, Cornell University:*

Mr. Hagenah has presented an interesting and fluent defense of the idea that past deficiencies in return should

properly be included in a rate valuation under the general caption of *going value*. His view is in harmony with the law in the State of New York as interpreted by the Court of Appeals in the Kings County Lighting case, and agrees with the practice of the Wisconsin Railroad Commission as presented in the Antigo Water case. He would include under going value not only actual developmental costs, but all past expenses and losses that do not appear in the tangible and overhead values or have not been returned to the investors in some definite form.

There is, of course, a great deal to be said for the view that Mr. Hagenah presents, and it is precisely the kind of considerations that he has briefly outlined that swayed the Court of Appeals of the State of New York to give going value the very broad meaning which includes the capitalization of all past deficiencies in return. The cases that Mr. Hagenah mentions of investors incurring heavy losses on account of competition, changing population, shifting requirements of service, etc., may be easily duplicated in every part of the country. Undoubtedly, if opportunity in such cases is not given to the investors to recoup their losses through service rates in the future, some personal injustice or hardship will be inflicted.

But, it seems to me, while I have a great deal of sympathy with the view that Mr. Hagenah presents, it cannot be satisfactorily applied throughout to all cases. Our standards of valuation must, of course, be based on justice, but we must consider the matter from a broad standpoint, or otherwise we shall not get very far in the regulation that we desire. Considerations of minute personal justice must not blind us to the requirements of broad policy which will conserve and promote the general welfare in the future.

As I attempted to bring out in my discussion in connection with depreciation as related to fair value, it seems to me, to repeat briefly, what we should do is to decide upon a definite and practically automatic policy of regulation of return. For the future, we should allow a fair return on actual investment, and no more, and we should make the provisions so definite that the investors would know exactly the risk that they incur and the conditions of the return that they may receive. But, as to existing investments, it must be admitted, we are in a hopeless muddle if we are too minutely concerned with personal justice. In most cases the records of the past are untrustworthy. We cannot determine neither the approximate actual investment, nor the returns already realized. Further, it must be remembered, while all the time we have had the right to regulate, we have not exercised the right but have given practically a free chance to the companies to earn all the profits that they could. Rates have been based not on cost, but on what the traffic would bear. Many companies have made hugely excessive returns (witness the fortunes that have been made out of public utility investments); the average company, we may reasonably suppose, has been moderately profitable; but, of course, many companies have not earned the return to which the investors were fairly entitled.

Now Mr. Hagenah's discussion applies simply to past unprofitable ventures. If we wish to establish definite regulation for the future, to get anywhere we must adopt a

reasonable valuation policy as to existing investments,—and the policy should not be complicated by too many considerations. The difficulty with Mr. Hagenah's proposal is, it cannot very well be applied logically to all cases. If in a valuation we are to make additions for past deficiencies in return, are we prepared to make subtractions for past excessive earnings? Mr. Hagenah, in general, seems to have in mind as a basis of valuation what we may term the *net sacrifice to investors*. In a sense, this basis appears as most just, but I feel convinced that Mr. Hagenah is not prepared to apply it rigorously to all valuations of public utility investments.

If we were to apply the *net sacrifice* rule throughout, there would be many cases in which the existing investment would be entirely wiped out through past excessive earnings, and there would be some cases when the stockholders would be found indebted to the public for undue profits that they received. Practically it would seem quite unworkable to take back profits obtained under rates which we permitted to exist. Such a proposal simply would not work. Neither the New York nor Wisconsin rules contemplate that there should be a deduction from the valuation on account of past earnings. I do not suppose either that Mr. Hagenah would favor such a deduction.

What the idea, therefore, after all amounts to is, we should add to the valuation for past deficiencies in return, but not subtract for excessive earnings. In other words, in the case of past unprofitable undertakings, we should follow the rule of *net sacrifice to the investors*, while in the case of profitable enterprises, we should make a physical appraisal and base the valuation upon the cost of the property (with, of course, liberal allowance for all possible overhead items)! Past losses are to be capitalized against the future service of the public, but past undue profits are to be disregarded! The rule works only against the public, never in its favor. Does justice work only the one way? If in full fairness we should capitalize past losses, why in equal justice should we not deduct from the physical valuation on account of past unjustifiable profits?

But, as already stated, Mr. Hagenah's idea of going value really cannot very well be worked both ways. For this reason, also because practically all companies have had a free chance in the past to earn all the profits that they could, I believe it would be highly desirable to make no allowance in a valuation for past losses,—to disregard entirely the question of past returns, whether profits or losses. Everything considered, the simplest and all around the fairest policy to pursue, would be to draw a curtain on the past; take in any case the existing property; value it on a reasonable cost basis with due allowance for depreciation; place the valuation on the books of the company; for the future allow a reasonable return on the amount and no more; also allow a fair return and no more on all additional investments. This procedure would permit definite regulation of return for the future; investors would know precisely on what terms they are devoting their capital to the public service; regulation would become practically an automatic matter.

CHARLES W. MCKAY, *Consulting Engineer, Chicago:*

In his discussion of the paper entitled, "Going Value as an Element in Fair Value," Mr. A. M. Fox intimated that going value occupies much the same position with respect to public utilities that good will does to privately owned competitive enterprises. Mr. Fox is not alone in this contention, for one frequently hears allusions to going value as a sort of public utility good will.

A careful analysis of the definitions and usual applications of the two terms raises a grave question as to the propriety of any application which implies that they are even remotely related.

Going value has been variously defined as "the cost of establishing the business," "the cost of acquiring an income," and "the capitalization of early losses incurred in connection with the development of the business to a point where it is capable of producing a return on the investment."

The meaning of the term "good will" is almost self-evident—it is "the probability that the old customers will continue to resort to the old place of business."

Obviously there can be no possible similarity between the values represented by these two terms, granting the correctness of the foregoing definitions. It may be even possible for a utility to claim both a going value and a value for good will.

Assume, for instance, that case of two competing telephone companies of about the same subscriber development. Despite the fact that company *A* is older and offers superior advantages in the way of toll connections, company *B*, by reason of its efficient management and high standard of service, has gained in popularity until its subscriber list equals that of company *A*, and its prospects for future development are exceedingly bright. Obviously a prospective buyer for company *B* must expect to pay something over and above the rate base value of the property, including going value, if he expects to consummate a purchase.

In the case of monopolistic utilities, however, good will has not, and cannot have, a place.

Discrepancies in the definition and application not only of such terms as good will and going value, but even of the fundamentals cost and value, are by no means infrequent. A paper presented before the Utilities Bureau on November 10th was entitled, "Reproduction Value vs. Fair Value." The term reproduction value is hardly in accordance with the

precedent established by courts, commissions and recognized authorities on appraisal matters. From the text of the paper it is evident that the writer seriously questions the fairness of rate base values determined by the reproduction cost method. The title of the paper, however, is misleading.

In conclusion, the present writer takes the liberty of urging the adoption of clear, concise definitions of current appraisal terms, based upon established precedent, and of suggesting that strict adherence to such definitions would facilitate a clearer understanding of a subject which, at best, is somewhat illusive. Inasmuch as the conferences held under the auspices of The Utilities Bureau are attended by prominent representatives of the legal, engineering, and accounting professions and by members of the various state commissions, a committee appointed by The Utilities Bureau might prove of great service in effecting the standardization of at least the fundamental appraisal terms.

MR. THORNE:

I don't know what is the custom of the person closing; I will say just a word; but I hope Mr. Erickson is now in the room. I have the highest regard for the Wisconsin Commission; I believe the Wisconsin Commission has done the country a great service in challenging attention to the historical method of quoting facts, instead of leaving this subject to a lot of sweeping generalities and fine-spun theories, that are rife for a time. But I must still take exception to the position taken by our friend Hagenah, on one proposition.

I have at no time said that I believed going value should be allowed for. I have used other phrases; because going value is an ambiguous word. It means many different things. One state commission holds it means all intangible values. One commission holds it means the same thing as good will. I have avoided the use of the term when I wanted to commit myself. For the actual costs of establishing the business, the development cost, a company is entitled to some consideration; but when it comes to the state going a step further, when it comes to asking the state to capitalize the losses of people in one industry—losses that occurred 10, 15, or 50 years before regulation was ever in existence—I think it is utter folly. I think that no court or commission permanently will follow that course.

THE PROBLEM OF UNIT PRICES IN VALUATION

BY M. G. GLAESER

Statistician, Wisconsin Railroad Commission

The problem of unit prices is basic to the whole problem of valuation. If the unit prices are fair the valuation is likely to be fair. If the unit prices employed are unstable the valuation will be unstable. The problem of unit prices may, therefore, be defined as the problem of finding above all a price that is fair to both producers and consumers and that will maintain its standard of fairness with some degree of stability.

This discussion of unit prices is premised upon a theory of valuation which may be summarized briefly somewhat as follows: The principle according to which public service properties are to be valued is the competitive principle. Though they exist under a condition of monopoly it is usually attempted to supply the conditions existing under free competition. Valuation under such conditions means that the prices be as nearly like actual market valuations as possible. The crucial step in the making of market valuations is taken when the buyer and seller "clasp hands and a bargain." The crucial step in the making of valuations for rate, sale, taxation, or other purposes is taken when the appraising agency exercises an honest judgment. In order to make this judicial act as nearly as possible akin to market valuations the judicial agency should possess the same knowledge of facts which buyers and sellers in the open market are presumed to possess. This means that inquiry must be made of the original cost of that which is being valued. The definition of property must be sufficiently flexible to include both the tangible and intangible elements. This information is necessary primarily from the producers' standpoint. Inquiry should also be made of the cost of reproducing the property under present conditions. This information is important from the consumers' viewpoint. Under normal conditions little more will be needed. The fair value will emerge from a judicial synthesis of these two estimates of cost, of the original cost as an index of past investment and of replacement cost as an index of present investment. This method of valuation gives room for a large measure of public policy and avoids the dangers of arbitrary, mathematical valuations.

One further preliminary observation should be made. In the technical process of valuation the problem of unit prices arises only after the problem of inventory has been solved. The inventory consists of the items, tangible and intangible, which comprise the complex of property being valued. These items may be identical with the unit for which prices are to be derived or they may represent more than such unit. If they represent more, the unit price is usually determined for an engineering quantity. A peculiar

case arises when in the unit price there is included an overhead percentage to cover incidental costs. So far as possible these costs should be eliminated from unit prices,—except when they enter as an inherent element of the unit,—and made a separate item of the inventory to be priced separately. This is conducive to clearness in estimating and enables a proper comparison of the two types of cost statistics.

The determination of unit prices therefore consists in finding a figure which, under normal conditions, shall fairly represent first the actual price paid in the past or the probable price which would have to be paid at the present time for the items enumerated in the inventory. It is not possible in this paper to enter into the minute technical details which are always met with. The problem will only be discussed in its larger and more theoretical aspects.

What is a fair price? Judicial decision has given the rule that it is the price paid by a buyer, willing but not obliged to buy, to a seller, willing but not obliged to sell. In other words, it is the competitive price of the economist. Price is defined as exchange value expressed in terms of money where the exchange value of commodities is a concept predicted upon their utility and scarcity. Utility and scarcity, operating through the forces of supply and demand, de-

PART VII

UNIT PRICES

THEIR IMPORTANCE

WHAT THEY INCLUDE

HOW THEY SHALL BE DETERMINED

termine the price of commodities in the market place. It will not be necessary to present a further analysis of the forces lying back of demand and supply. It is sufficient to point to the generally accepted theory expressed by John Stuart Mill that "value always adjusts itself in such a manner that the demand is equal to the supply."

The point of adjustment obviously is a varying one depending upon the existing state of demand and the existing state of supply. The only element of fixity is derived from the supply side where ultimately the competition between producers, buyers and substitute commodities reacts upon the exchange value of any one commodity tending to fix a price which is equal to the expenses of producing it. That price, then, which represents the expense of producing a unit of a commodity may be said to represent its normal value, while any price higher than this represents an abnormal value which competitive forces are continuously seeking to reduce. This reduction is accomplished by the transference of the instruments of production, nature, labor, enterpriser's services and capital from one field of productive enterprise to another. Inasmuch as a period of time is required to effect this transfer it may be concluded that the strength of the tendency of actual competitive values to equal normal value is dependent upon the length of the period of time considered.

It is in the light of normal value that prices ought ordinarily to be fixed.

It should be noted that normal value does not represent a cut-throat or bankruptcy value. It represents rather that equilibrium when the production factors are satisfactorily rewarded. This should clear up some of the difficulties with which unit prices are fraught. The price applied to units of quantity should include beside the bare cost of material and labor a normal allowance for interest and profit. Such profits are necessary and sanctioned by competitive practice.

Normal competitive prices are also best ascertained if the commodities valued are standard commodities. Non-standard goods represent so many unique qualities that the individual estimates of buyers and sellers vary greatly. Here price fixation is necessarily difficult. In the case of standard commodities, however, which are widely used and therefore have a wide market, competitive forces are able to try conclusions. Patented commodities or those produced under conditions of complete or partial monopoly are other exceptions to this rule.

Demand and supply would be perfect regulators of price for, given the necessary element of time, normal prices would soon be reached. But competition is not perfect. Certain frictional elements are always present and those too cause fluctuations in price, though of a minor character. They can be merely named here. Ignorance of one's own economic interest, the influence of custom, the inertia of investment, the immobility of labor, unequal taxation, planless production, and even the presence of a by-product industry, tend to destroy the perfect adjustment designed by the competitive principle.

There has been much speculation both from an academic and practical viewpoint as to the cause of price changes. Before the modern era the price of all staple commodities was fairly constant. The reasons for this were to be found in the comparatively simple and unchanging methods of production, the fact that market demands had not acquired their varied forms and that costs of production were constant and could be relied upon with greater certainty. Custom played a larger part than at the present time in fixing prices, and custom is a conservative force. The modern era was ushered in by revolutionary changes in the methods of manufacture. Untried processes were applied which, when successful, caused prices to change rapidly. Competitive ingenuity was better able to try conclusions. Betterment in productive processes brought on overproduction which had a depressing effect upon prices. Certain counteracting tendencies at once set in. The improvement in transportation facilities made possible the evening up of price levels in the different producing and consuming centers. The fact that many of the standard commodities have become trust controlled and subject to the trust policy of price maintenance has been a large factor in keeping prices constant.

There may, of course, be a general rise or fall of prices. Such a phenomenon would imply primarily a change in the value of money or better the value of the standard of value. The standard of value has been defined as "any commodity by means of which people measure and express the value of

other commodities." A standard, in modern society, also serves the purpose of comparing and recording the values of the various articles of commerce. The value of the standard is, therefore, inverse to the level of prices. Individual commodities may change quickly in price because their exchange ratio has changed relatively to one another. In order that the price of all commodities change in the same direction it is necessary, however, that there be a change in the standard which would necessarily require a long period of time.

Economists distinguish the following causes affecting a change in prices:

1. Prices may rise due to a rise in the exchange ratio of commodities.
2. Prices may rise due to a fall in the value of the standard commodity.
3. Prices may fall due to a fall in the exchange ratio of commodities.
4. Prices may fall due to a rise in the value of the standard commodity.

In countries with a secondary standard of value prices may also rise as the secondary standard depreciates with respect to the primary and fall as it appreciates.

This brief analysis may have been sufficient to show that the act of valuation as based upon the competitive operations of demand and supply is a difficult one to perform with any degree of accuracy. The degree of accuracy of the valuation will depend primarily upon the accuracy with which the prices that are used reflect the normal operations of the market. To be exactly accurate valuations should change with every change in the prices of which they are composed. But a glance at competitive industry will disclose, however, that nowhere is any attempt being made to derive either exact or fixed valuations. Compromises are being effected continually through reorganizations and receiverships.

Without a special investigation, always difficult and never accurate, it will be impossible to determine whether changes in prices are due to causes operating upon commodities or due to causes operating upon gold. These two sets of causes should be separated out and studied with respect to each item. Such an examination will usually disclose that prices move according to two separate plans representing distinct forces acting simultaneously. There will be price movements covering short periods of time and movements of longer duration. *A priori* one would say that the short period movements are caused by temporary changes affecting demand and supply, while the long period movements are caused by more permanent changes. The former are usually held to be changes affecting commodities in general, the latter changes affecting the commodity used as the standard of value.

Valuations for purposes of rate making aim primarily to get an equitable and economically sound basis for determining fixed charges for a future period of time. Evidence of past cost is necessary in order to permit consideration of equity. Evidence of present cost is necessary in order to properly gauge the effect of economic changes on future production.

In determining the unit prices which shall be applied to

inventories so that the result will show the actual expenditures incurred reference must be had to the prices actually prevailing at the time the properties were constructed. These unit prices can be determined from accounts and other supporting evidence. In case the actual cost cannot be ascertained from the records an estimate should be made which will apply the average price paid for materials and labor during the period of construction. In determining the cost of reproduction a correct application of the theory would require that the prices be the prevailing price for a period equivalent to a construction period. Since the date of valuation may fall within a period of abnormally low or high prices, it has been the practice of some regulating bodies to apply ideal prices which represent neither the actual price nor the present prevailing price but rather the trend of prices. In ascertaining prices based upon the general trend the average price for a period of years, usually from 5 to 10 years, has been ascertained and applied. This practice is defended on the ground that such ideal prices will more nearly reflect the future cost of these properties and will therefore best insure permanency of the rate schedules.

It has been generally held by courts and commissions that unit prices may contain besides the bare cost of labor and materials an allowance for contractor's profit. In addition unit prices should cover all the costs of transportation, handling and storage. There has been some disagreement, however, when allowance is to be made for transportation costs over the carrier's own lines.

Before the advent of regulation, it had been the practice to charge into the construction accounts, amounts estimated to be equal to the cost of movement of men and materials. This amount was not designed to cover any allowance for profit. The contention of carriers now is that this allowance is insufficient in view of the interpretation that cost to an operating utility for materials going into permanent plant means operating expenses plus profit.

In the competitive field materials required in the construction of permanent plant pay the regular tariff rates. This is true also of the materials going into the construction of other utility properties besides railroads. Should an exception be made when the utility is its own forwarding agent?

The construction organization of railway companies has always been regarded as distinct from the operating organization. It is true that this distinction has been principally one of convenience. Only in this way, however, could construction expenses be properly segregated and finally charged to capital where they belonged. When the work has been done by contractors, the original contract usually stipulated what charges, if any, shall be made for the transportation of men and materials. If the contract required the payment of regular tariff rates, it is certain that this item was taken into consideration by the contractor. The question whether a railroad can properly charge itself rates for construction materials which pay a profit can best be decided without reference to past practices. In view of the competitive organization of all industry there should be no question that a railway under construction pay full tariff rates on materials transported over foreign lines. The full amount of such

charges represents construction costs properly chargeable to capital. When such materials are hauled over the line of a carrier which is still under construction and not yet handed over to the operating organization, it is immaterial whether such haulage is undertaken free of charge or at revenue rates, because in the first case the costs would be regarded as an operating expense during construction and charged to capital, while in the latter case the revenues would be regarded as earnings during construction and credited to capital. This procedure is proper because there is underlying the whole construction process the idea of permitting as a reasonable capital cost interest during construction.

Thus expenditures for materials and labor going directly or indirectly into construction are not left uncompensated. As soon as a requisite portion of the line has been completed, it is turned over to the operating organization. Interest during construction ceases and the capital sunk in construction must seek its remuneration through operations for profit. Regular tariff rates are published and applied without discrimination to all traffic carried. If the road carried materials required in operation, it is again immaterial whether it carried them free or at revenue rates. The expenses and earnings would alike enter into its yearly income account. Since such materials are transported for the sake of operation they represent a cost of operation. When a carrier transports materials not for purposes of operation, but for purposes of construction, the cost of performing such service cannot be charged to operation, but should be charged to capital. If this cost is interpreted to mean merely operating expenses, there has been no return upon the fixed capital employed in operation and its services are to that extent uncompensated. If the materials are carried at a profit, such profit goes to compensate capital invested in operation and not capital invested in construction. If the profits thus earned from carrying construction materials make the aggregate profit earned on capital invested in operation excessive, such profit is subject to the statutory right of limitation. The above it would seem should at least be the view held with respect to such operations in the future.

The reasons advanced for the use of normal unit prices should not be interpreted as an argument in behalf of a mere averaging of prices for some time past. This mistaken conception of the nature of normal unit prices has brought on considerable opposition in some quarters. Mr. H. L. Gray, chief engineer of the Washington Commission, for instance, disapproves of the use of average prices. "In preparing such appraisals," he says,

"it has frequently been the custom to use the average of prices prevailing during several years previous, this method being based upon the assumption that the number of years selected would cover the construction period. The wisdom of so selecting prices has not been clearly demonstrated. If the plant is new, and actually was constructed during the years selected, then the advantage is obvious, but if the date of appraisal is remote from the date of construction, why average a number of prices that bear no relation to the actual cost, or the prevailing prices? It is equally fair and much more convenient to assume that the date of the appraisal represents the beginning of the construction period, rather than the end. It may be well said that the past

years exhibit the prevailing cost of work, while those of the future do not. Nevertheless, it should be borne in mind that practically all the material will be contracted for at the beginning of the work, and that labor costs are apt to vary materially in three or four years. After all, the probable construction period is an assumption, either way it is taken, and the folly of splitting hairs over assumptions, and entailing a great deal of additional work, should be evident, particularly when it is remembered that the cost of reproduction is only one element of the value."

It is obvious, of course, that a criticism directed against the mere averaging of prices is not valid when such averaging is for the purpose of determining a normal price. It is not unusual that a current market price can be taken as the normal price if upon investigation this is found to be the case. In the case of some materials, such as lumber and ties, the price of which has been steadily rising, current quotations may be much nearer the normal price and an average price determined for some years back essentially unfair. The practice of averaging prices represents no hard and fast rule and is merely a useful device for determining normal price in the case of materials showing wide fluctuations.

The price of cast iron pipe affords a good illustration of the problem of unit prices. The violent and erratic fluctuations of price, recurring at varying intervals, and most noticeable in the current price of base materials, may be eliminated by taking only the average price for the year.

The movement of the price of cast iron water pipe was traced from 1883 to 1912. The lowest average yearly price of \$16 was attained during 1898 while the highest price of \$36.50 was reached in 1907. The range represented by these price levels is approximately \$20. The average price as well as the median price for the 26-year period is \$26 per ton. No distinct modal price seems to have prevailed; \$27 per ton and \$31 per ton appear to have been the prices most frequently quoted. The five-year average begins with a price of about \$28 per ton in 1888 with a general downward trend until in 1898 a price of \$18 per ton is reached. From this time forward the general trend is upward, culminating in a price of \$30 per ton in 1910. Since then the general price tendency has been downward. The ten-year average of prices follows the five-year average in its general trend.

These statistical facts are of large importance in their practical application to problems of price fixing. For instance, it may be assumed that a water works' plant has installed certain quantities of cast iron pipe in its distribution system, and that the actual installation covered a period of one year. In estimating the cost of reproduction, some decision for one or the other of these price levels must necessarily be made. The importance of making a proper choice can best be seen by actual illustration.

In a recent water works case before the Wisconsin Railroad Commission the valuation of the plant had to be determined for the purposes of rate fixing. The cost of reproduction new of the plant, excluding the item of cast iron pipe, was fixed at \$503,068. A wide range of prices was available. If it is logical to judge future prices by those of the past, there was evidence to show that the price might vary any-

where between \$16 and \$36 per ton. During the period of 29 years, \$27 per ton was a price more often quoted than any other. In view of the fact, however, that the price fixing is to be applied *a priori* to a period immediately succeeding the present, the level of prices during the present year or a few immediately preceding would be more important as an index of future prices. For this purpose five- and ten-year averages are important. They tend to introduce the principle of least error. Except in the two extreme cases of the year 1898 when the price rose \$9 per ton and the year 1907 when it fell by about the same amount, these two types of moving average prices represent the general trend of prices. Considering the longevity of cast iron pipe and its fairly standard nature, the ten-year average would seem to best meet the conditions of the problem.

The following table will serve to show the variation in estimates resulting from an application of the different possible price levels:

	ESTI- MATED COST USING MIN. PRICE OF \$16 PER TON	ESTI- MATED COST USING MAX. PRICE OF \$36 PER TON	ESTI- MATED COST USING MODAL PRICE OF \$27 PER TON	ESTI- MATED COST USING 5-YR. AVE. OF \$25 PER TON	ESTI- MATED COST USING 10-YR. AVE. OF \$28 PER TON
Cost New of Plant exc. C. I. Pipe.....	\$503,068	\$503,068	\$503,068	\$503,068	\$503,068
Cost New Cast Iron Pipe.	71,335	160,540	120,410	111,493	124,869
Total Cost New.....	574,403	663,608	623,478	614,561	627,937
Per Cent of Minimum Cost	100.00	115.53	108.54	106.99	109.32

Another type of price movements is illustrated by the wages of general railway labor. While here, too, average prices show considerable yearly variation, their general trend has been upward. Under such conditions estimates of the cost of reproduction are unfair when based upon any averaging of past prices. On the contrary, it would seem that a fairer result is obtained by taking either present yearly average price or, better still, the price indicated as the present general trend.

There is no known method by means of which future prices can be accurately prognosticated. Nor is this at all necessary in valuations for rate making purposes. The price bargain between producers and consumers of public utility's services cannot from the very nature of these enterprises, with their large investments in fixed capital, be based upon a theory of constantly impending competition. It is sufficient if the valuations in broad outline take cognizance of the increases or decreases in the costs of supplying the fixed capital, just as a rate cannot be made to change automatically with increases and decreases in the circulating capital costs or other operating expenses.

Since the work and expense of conducting valuations are extraordinarily heavy, economy alone would dictate that valuations should be put upon such a price basis as will tend to preserve the validity of the valuations for some time to come. If valuation is to become the cornerstone of rate

regulation, it would seem to be necessary not only that the original valuations be as stable as possible, but also that steps be taken to keep these valuations abreast of the times so far as prices are concerned. A permanent organization such as the present division of valuations should be formed

to study and report the movement of prices, to correct the inventories and apply the new unit prices, and in general to present all those studies and perform all those operations which shall reasonably preserve the integrity of the valuations.

FINANCIAL ASPECTS OF VALUATION

By PAUL A. SINSHEIMER

Bond Expert of the California Railroad Commission

WE HAVE chosen upon valuation as a pivotal element in the regulation of our public utilities. If our gathering here denotes our belief that it is a topic capable of cold, exact, legal analysis and determination, I fear that our earnest efforts are conceived in failure. If, on the other hand, we recognize the subject as living, and warm with purpose, we may hold out high hope of accomplishment.

A discussion of valuation may defeat itself by merely dedicating itself to the standardization and legalization of that which has already grown into being.

Valuation must throb with the human element. It must, above all, represent an endeavor, and an honest endeavor, to do justice and equity among men.

FINANCIAL SECRETARY NEEDED

"The ascertainment of that value," said Mr. Justice Hughes in the Minnesota Rate Case, "is not controlled by artificial rules.

It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relative facts."

It may reasonably be asked what all this has to do with the financial aspects of valuation. And the answer is that it is a basis upon which the financial considerations which enter into valuation must rest.

We have progressed to a stage where we set forth concisely our premises for the valuations of today and yesterday with small thought of the valuations of tomorrow. We establish our standards to ascertain reproduction cost, original cost or market value and in so doing we close our eyes to the obvious deficiencies of our methods. We would do well to analyze more closely the facts upon which our standards are dependent. I know of no more profitable avenue of inquiry than that of financial understanding.

The properties that enter into a public utility corporation must be acquired through its stock, its bonds, its notes and accounts, its surplus earnings and occasionally through bonuses and donations. A scrutiny of the financial affairs of a corporation must reveal the outgo for each acquisition.

EXAMPLE OF CALIFORNIA

I can best illustrate by reference to the practice of the Railroad Commission of California. It has been the policy of that Commission to handle all matters pertaining to the finances of public utility corporations through what is called its Stock and Bond Department. This department has passed upon the issue of \$550,000,000 of public utility corporation stock and bonds, has subjected them to careful analysis, and in pursuance of this work has examined somewhat carefully into the finances generally of these corporations.

This has entailed a study of the corporation from its origin, tracing each issue of stock and bonds, the money received therefor and the application of the funds. A special endeavor has been made to determine the value of the assets acquired and their relation to their cost. A similar investigation has been undertaken by this department of the California Railroad Commission among railroad and public utility corporations, national in their extent and importance.

ORIGINAL COST DECEPTIVE

The results proclaim the necessity for the exercise of a discriminating caution in accepting cost as value; or, to phrase it somewhat differently, in accepting cost as the basis upon which the regulating body should predicate public utility earnings.

The reasons for this are twofold; first, manipula-

PART VIII

FINANCIAL ASPECTS OF VALUATION AND REGULATION

INFLATED COSTS OF MONEY AND MATERIALS

NEED FOR CLOSER CONTROL OF CREDIT

NECESSITY FOR REGULATING PRICES OF PUBLIC UTILITY MATERIALS UNDER MONOPOLY OWNERSHIP

PROPER ACCOUNTING

PUBLICITY IN ACCOUNTS

CONFIDENCE IN INVESTMENT CIRCLES

tion, and second, inflated costs of money and materials. By manipulation I mean the illicit profit and the breach of trust. The inflated costs of money and material arise from centralized credit and the control of materials by unrestrained monopoly. The first may not be difficult to remedy. The second will present a formidable issue.

I am persuaded that a large part of the ills to which public utility corporations are subject is attributable to the illicit profit. Great fortunes are rarely made from the earnings that accrue from railroad stocks and bonds. They have come rather from the excessive profits, either through the financial manipulation of railroad affairs or through excessive profit in the sale of railway materials. And these excessive and often illegitimate profits are added to cost and we invariably include them when we adhere rigidly to valuation by original cost.

MILLIONS MAY BE WASTED

The investigation by the Interstate Commerce Commission into the affairs of the New York, New Haven and Hartford Railroad revealed shocking divergence between original cost and value; the expenditure of \$36,000,000 to acquire the Westchester line of an estimated value of \$6,000,000; the expenditure of \$24,000,000 in money and securities for the trolley lines of Providence, representing a cash investment of less than \$10,000,000 for an outlay of \$25,000,000. "From all of the foregoing, and from a consideration of the method in which expenditures, not specified here, have been made," said the Interstate Commerce Commission, "it is submitted that a reasonable estimate of the loss to the New York, New Haven and Hartford Railroad Company, by reason of waste and mismanagement will amount to between \$60,000,000 and \$90,000,000."

The record of exploitation and iniquity might be extended. But the case does not require such corroboration.

The effect upon value of the high cost of money and materials has been given less attention and I prefer, therefore, to deal more at length with that aspect of public utility business.

EXCESSIVE BANKING PROFITS

Not long ago a western company, finding itself in pressing need of funds, called in the services of one of the largest New York financial houses. The data as finally arranged were presented to the California Commission and they included cost multiplied upon cost for engineering services, extra audits, legal expenses, banking commissions, all of which, as a matter of fact, made the actual cost to the corporation twice the normal. The officials of the utility had come

previously to the Commission, and announced their disinclination to submit to the terms proposed, but had admitted their inability to protest. When the matter was finally submitted to the California Commission the point was raised that the demands were excessive and unreasonable.

"I will admit," said the attorney for the New York financial house, "that my clients are robbing these gentlemen, but I would add that these gentlemen should be proud to be robbed by my clients; for corporations all over the country have at this season begged my clients to rob them, but they have consented to rob only the most worthy."

The effect, of course, was to give a wholly exaggerated statement of original cost. A monstrous banking profit had been exacted.

RAILROADS LIKE TAMMANY

When we enter the domain of prices and cost of materials we again encounter a highly organized condition. Engineering firms, in close alliance with the large supply houses, have grown into being, which impose a charge ranging from 5 per cent to 7½ per cent and 10 per cent of the cost of the actual construction work. This item passes regularly into the original cost.

The city of Boston found its freedom of purchase denied in the steel industry under the so-called New England agreement. Mayor Baker of Cleveland felt obliged to resort to the threat of an appeal to Congress to bring bids for the equipment for the new Cleveland municipal electric plant.

Mr. Charles S. Mellen apparently was intimately conscious of the abuse arising from the cost of money and the cost of materials to the railroads.

"A great railroad," said Mr. Mellen, "is more nearly like a Tammany political organization than the people have ever imagined, and the attitude toward the stockholders by bosses of the railroad is not different from the attitude toward the people by political bosses. Too often the boards of directors of our corporations, in handling the business of stockholders, are like some boards of aldermen or the members of the legislatures in our cities and states. They do not represent the stockholders at all. They really represent and are under the control of bosses entirely outside, who make enormous profits through their control of the railroad in outside business."

PROFIT IS IN COST

I shall quote again from Mr. Mellen:

"I would also compel the railroad managers," said he, "to advertise for bids for all purchases of any considerable amount and for all construction work and other work which involves a large expenditure."

And again:

"The cry against public ownership will vanish in the air when once the opportunity for making profit out of the 'concessions,' so to speak, of the business is gone."

These two elements, the cost of money and the cost of materials, obviously affect most intimately the original cost of any public utility enterprise. And heretofore, in all of our discussions of the subject of value, we have been prone to accept original cost as representing the actual outlay required by the enterprise. Now we are very apt to find, if we establish ourselves upon the basis of original cost, that we are in reality merely bolting the front door and leaving the back door wide open.

In any consideration of the financial affairs of a utility corporation it is just as essential that it buy cheaply as that it sell high. The profit does not lie in the sale price. It lies in the difference between the sale price and the cost. Whenever, therefore, we accept an inflated cost of money or an inflated cost of materials, we thereby recognize an inflated capital account and an inflated amount to be produced through the rates.

NEED CHEAP MONEY

Before we may obtain, therefore, a clear and adequate view, perhaps not of original cost, but in reality of "reasonable cost," public authority should address itself to the financial aspects of a corporation to determine: first, that it is so financed through its stock and bond issues as to enable it to command the highest credit; and second, that it pays no more than is required for the money it must obtain.

But this again is not all. The banks of the country, greater public utilities in a real sense, obtain their funds at a cost, exclusive of overhead expense, of less than 4 per cent. It is to the interest of the country that they should obtain money cheaply and be able to lend it out cheaply. It is equally of interest to the people of the country that the utility should be enabled to borrow money cheaply and to thrive on a low return of earning.

STATE LIMIT ON INTEREST

Government has begun to take an interest in this aspect of its economic life. We have had monetary readjustment calculated to decentralize credit and make it more available for legitimate industry. Is it not a part of the function of government to go further forward, to the end that the public utility, dedicated to the public service, shall be enabled to borrow on the lowest possible basis? Would it not be the part of wisdom for government not only to regulate the issues of stocks and bonds by its public utility corporations, not only to exercise a financial supervision which

shall eliminate the illicit profit and the breach of trust, but to extend increasing opportunities of credit?

When we see utility corporations struggling in the market for money at 10 per cent, 11 per cent and even higher rates of interest, we know that something is wrong, for these interest rates, of course, either go into the capital accounts and valuations of these utilities, or they so sorely impair its credit that all of its costs must rise.

Government could well undertake a closer control of credit. It has chosen to surrender the power to the caprice of private profit. The investment funds of the country constitute the driving force of its industrial life. Government should require that they be not dissipated, but be made available for legitimate industry on reasonable terms.

I speak not in criticism, but by way of earnest suggestion.

ROOT FOR REGULATION

A few years ago a suggestion looking to the regulation by government of the essential materials under monopoly control, which enter into public utility enterprises, might have been regarded as somewhat drastic. But we are now in an advancing day and many things are coming to pass which yesterday seemed in the far-away.

Elihu Root, United States Senator from New York, and formerly Secretary of State, in a recent pronouncement has recognized the trend of affairs. "To attain the ends which every one agrees ought to be attained," said he, "it appears necessary that government shall interfere to a much greater extent than in former times with the complicated and interdependent life of the people."

Of particular interest is the recent declaration of the United States Supreme Court. "The basis of the ready concession of the power of regulation is the public interest," declared Mr. Justice McKenna in the German Alliance Insurance case. "Against that conservatism of the mind which puts to question every new act of regulating legislation," said he, "and regards the legislation invalid or dangerous until it has become familiar, government—state and national—has pressed on in the general welfare; and our reports are full of cases where in instance after instance the exercise of regulation was resisted and yet sustained against attacks asserted to be justified by the Constitution of the United States. The dread of the moment having passed, no one is now heard to say that rights were restrained or that constitutional guarantees impaired."

COAL, LUMBER AND OIL

We learn that the bituminous coal interests have at different times themselves voluntarily urged upon the national government the wisdom of combination under Federal control with government regulation of prices.

Before the Federal Trade Commission, during its hearing on the lumber industry in August of this year, Mr. G. X. Wendling, representing extensive lumber interests on the Pacific Coast, urged the same regulation of that industry by the government, with the right lodged in public authority to fix and determine the prices at which lumber should sell. His plea was for "legalized co-operation" under rigid government regulation.

In the state of California, operators in the oil industry have urged that petroleum be declared a public utility with the right lodged with public authority to determine the price of sale. The same suggestion was advanced by a member of President Taft's cabinet. During the present year, men in control of a substantial part of the oil output of the state have urged upon the legislature the passage of a law which would enable the state to stabilize the supply of petroleum by requiring a franchise or certificate before new wells could be developed.

Surely no form of paternalism has been urged by those affiliated with the public utility commissions commensurate with that suggested by the representatives of these vast interests.

IS EQUIPMENT NEXT?

In the face of these facts and in the knowledge of the existence today of a Federal Trade Commission, I suggest that we may give grave consideration to the thought of calling upon government to regulate those industries that control in monopoly form the essential materials which enter into public utility works. We have at the outset a request from a portion of the industries represented in public utility enterprises that they be placed under government supervision as to their practices and their rates. It would require but a short step to include the steel industry, the equipment industries which provide the locomotives and the rolling stock for the railways; and the electrical manufacturing corporations which control the patents for the manufacture of the electrical machinery of the country.

I do not here suggest a form of regulation extending over the broad field of industry. Far from it. The suggestion embodies but little more than has already been urged by the industries themselves. The purpose would be twofold. First, to assure a proper cost to our public utility enterprises of those materials which enter into their construction, and hence a proper

basis of honest valuation; second, a form of protection for the industry itself, safeguarding it against the ravages of an unrestricted and destructive competition and establishing it upon a solid plane of liberal profit and rewards.

COMMUNITY RIGHTS FIRST

I can perceive three bases of protest against the suggestions here offered. First, of course, the cry of paternalism. And let me answer that the need of our country is a closer co-operation, a more spiritual understanding of our needs, a deeper appreciation of our liberties and a keener recognition of the dangers to which they are incessantly exposed. We can not be strong without, if we are not strong within. And we can not be strong within unless we are united. And we can only unite if we are willing gradually to learn the lesson that the right of the individual must be merged into the greater right of the community. If a greater paternalism be needed to supply the remedy for the seething industrial unrest and to curb the aggressions of consolidated wealth, then I say, let us have the greater paternalism.

"The old law of supply and demand no longer controls the market as in peace," said Under Secretary of State Arnold Wahnschaffe of the German foreign office only last month. "Governmental regulation has replaced this law in order to prevent too high prices for the poor. Butter prices will be regulated for the empire by the rules of Berlin, promulgated by the Chancellor. Maximum prices will be set for milk. The needs of children, ailing mothers and the sick will be specially cared for through sales counters and special tickets. Methods also will be taken whereby the poorer portion of the population will be able to get meat at cheap prices. In a few days we shall forbid the sale of meat and frying with fat in restaurants for several days a week, and so regulate the consumption that not only every one who can pay, but all who need them, will receive, bread, potatoes and all other foods."

I am not afraid of paternalism in American industry and I am willing to take my chances in this republic with any danger of its dedication to military aggrandizement.

CAPITAL'S RIGHT TO PROFITS

The second objection will undoubtedly embrace the statement that capital, being timid, will be frightened by such form of regulation, and will cease to invest. The obvious answer is: first, that capital can not cease to invest. It must invest or it perishes; second, that, if capital may be assured the right of co-operation under the law, with a further right and assurance of ample profit and return, capital will naturally seek

such channel of investment; third, that such form of regulation is the suggestion of the very capital to be regulated; and fourth, that if capital persists in the alternative of the right to govern or the right to withdraw from industry, the government itself must furnish that which private capital may refuse to supply.

It can not be too clearly stated nor too frequently emphasized that the right to regulate, far from meaning the right to deprive capital of an adequate return, should, in reality, carry with it the obligation to provide capital with generous and liberal profit.

Public utility development should not lag behind. It should lead the way. And any public authority which adopts a niggardly policy toward the public utility enterprises in its midst will sooner or later be struck down by the weapon of its own forging.

Regulation must make the business attractive or regulation fails. If regulation focuses itself upon narrow considerations of 6 per cent, 7 per cent and 8 per cent, or any other set return, it hoists thereby the flag of defeat. Regulation must be big and broad, and it must realize its responsibility in keeping unchecked the flow of new capital into regulated enterprises.

NATION SUPPLIES LACK

But if in the face of all this, private capital, insistent upon its right to command, by reason of its force, should still refuse to invest, it is then incumbent upon the government to supply the deficiency thus created.

Recently the United States government enacted certain legislation affecting the American merchant marine. I have heard representatives of steamship capital state that the law was highly confiscatory. I have heard representatives of the seamen insist that the law was merely a humane measure and in nowise calculated to cast undue or improper burdens upon capital. Capital resorted to force and threat to require the repeal of the law. Capital withdrew from the steamship service. Faced with the alternative of yielding to the demands thus made or of itself supplying the service, we learn from Secretary McAdoo of the Treasury Department that the government itself will undertake the steamship business for the country. "Private capital says it can not undertake the service," asserts the secretary, "therefore it is incumbent upon the government to give the service." Accordingly the next Congress will consider an appropriation of \$50,000,000 for a great national public utility service; the maintenance of a merchant marine.

The third objection to be urged will be the check which regulation may have upon the inventive and the enterprising genius of the country. Those who will urge this most insistently rely upon their fundamental philosophy that the whole mainspring of human effort is profit. It is notorious that a very large part of the inventive genius of the country is absorbed by the corporation which by standing contract possesses itself of the patents which its employees may evolve. But there is something still deeper than this. Inventiveness and enterprise rest upon motives, not only material, but spiritual. History shows there has been an intensity of satisfaction in service as well as in material reward.

Nor am I speaking idly nor in platitudes, for the record of things done, inventions made, will bear me out.

But regulation never has and never should withdraw the reward for enterprise and inventive genius. It has, on the contrary, specially insisted that it be ever present and liberally bestowed.

HUMANITY MUST GOVERN

In conclusion, and by way of summary, let me suggest: first, that we keep a constant eye upon the ultimate purpose of valuation; second, that we eliminate the illegitimate profit and the breach of trust; third, that we be not misled into "original cost" when we have in mind "reasonable cost"; and fourth, that we urge upon government a closer control of credit; fifth, that we give heed to the necessity of regulations of public utility materials under monopoly ownership; and sixth, that we strengthen the hands of government to perform the public utility service which private capital can not be induced to furnish on fair terms. Then, and only then, will we attain to a clear and logical basis of valuation.

Finally, let me urge upon you that valuation be made a forward looking thing. Let it be approached as a problem of government, with a fixed eye upon the co-ordination of our industries to the needs of our people, with a broad spirit and a far vision. Those who have undertaken this work have assumed a solemn duty. It is not lightly to be tossed aside with judicial and technical decision fitted to the needs of the instant. It must be met and measured by the needs of humanity. The nation which built the Panama Canal and contemplates its own merchant marine need not falter in the face of the present issue.

FINANCIAL ASPECTS OF REGULATION

By ROBERT C. WOOD

Public Service Commissioner for the First District, State of New York

We have heard at the proceedings of this Conference most able and interesting discussions relating to the various methods of obtaining the valuation of public utility properties. We have also heard discussed at length the necessity of making proper allowances for the various phases of depreciation.

I believe that about these two questions lie the most important factors of regulation not only for determining, but also for maintaining, the value of public utility properties. Also that upon their proper solution depend not only to a great extent the value of existing securities, but also the conditions under which new capital can be obtained for our public utility corporations.

Much as our views may vary regarding the methods to be employed in regard to the valuation and maintenance of these properties I think we can all agree that the objects we want to attain by the regulation of public utility companies are:

- (1) a fair rate to the public
- (2) a fair return on the capital invested
- (3) that the corporation should be in a position where it can obtain from time to time the capital it needs to provide the additional facilities that the public may demand.

I believe that the principle of state regulation of these corporations has become firmly established and that this regulation has encouraged and protected their development along lines proper and necessary to the communities which they serve. Competition between public utility corporations is rapidly becoming eliminated and has been succeeded by a strict regulation of all the acts of these corporations by state public service commissions.

While commissioners of different states may now hold somewhat conflicting views, the general tendency is to standardize certain fundamental rules and regulations particularly those relating to the appraisal and maintenance of public utility properties. Unfortunately, we are a long way yet from anything like a universal agreement on these fundamentals, and this process of standardization is still in a state of development. The rules and regulations of the various public service commissions are, however, gradually crystallizing toward a common basis.

It would seem that there are certain fundamental facts that will be admitted by all.

1. That the policy and principle of the regulation of public utility properties by public service commissions have come to stay. A large majority of the states of the Union have adopted it.

2. That, if this system of regulation is properly and logically carried out and enforced, both the public service corporations and the public whom they serve will be mutually benefited.

3. The investor should receive a fair and reasonable rate of return on his investment.

It is the function of regulation to determine the value of the investment in the property in order to ascertain the basis for a reasonable rate of return.

Regulation as universally accepted should, I believe, mean that the investment must be protected against depreciation. Valuation as a step in regulation involves the inventory of the property, the determination of its condition and thus makes possible the accurate ascertainment of depreciation charges. Proper regulation prevents the use of corporate funds for the payment of dividends at the expense of maintenance or by failure to take adequate measures against the inevitable effects of age, decay and the "change of the art." By thus maintaining operating efficiency and consequent continued earning power, properties are safeguarded in the interest of proper service to the public, as well as equally safeguarded in the interest of the investor.

The latter should be assured that proper allowances are being made from operating revenues for renewals and replacements of the property, so that the plant and equipment can be renewed as fast as they fail to render efficient service. In this way a high degree of efficiency should be preserved, and the investor assured that the full value of his property will be maintained.

Regulation further means proper accounting and publicity in accounts. The utility must make reports to the commission and these reports are public documents. There can be no secrecy as to earnings and profits. The extent of the property the company owns is clearly defined. There can be no financial jugglery or abuse of the confidence of the investing public by promoters or managers as has at times unfortunately happened in the past. The corporation in turn should, through being allowed to charge a fair and equitable rate, be in a position to attract such new capital as it requires from time to time for extensions and improvements. In this way only can it furnish the public with such facilities as it needs.

Every public utility corporation, be it a gas, electric light company, or a street railway company, does its share in the development of the locality it serves, provided the service it renders the public is adequate and its charges are reasonable. Every community is dependent upon its lighting, transportation, telephone and telegraph facilities for its development and is vitally interested in the quality of service it receives.

As both the corporation and the public are so deeply interested in each other's welfare, it can be easily seen that a fair and reasonable equilibrium must be maintained between them. If the locality or section served is a rapidly growing one, it continually requires more and more lighting and transportation facilities. In fact, it cannot reach its maxi-

ment development without them. In a developed neighborhood, also, the public is interested in having these facilities maintained at their maximum efficiency; otherwise, the prosperity of the section would be seriously impaired. The corporation, on the other hand, is vitally interested in the prosperity of the territory it serves, and if its management is progressive, it should do everything in its power to render adequate service at reasonable rates. In order to accomplish this the plants must be maintained at a high state of efficiency and a proper allowance be made annually for the various phases of depreciation.

It is a well known fact that a public utility corporation never stands still. It continually requires new capital. Moreover, the growth and development of the territory it serves often demand expenditures considerably in advance of a reasonable return on the capital invested. "The advance in the state of the art," especially the electrical art, is continually requiring that machinery, equipment, etc., be superseded by a newer and more up-to-date plant and equipment. The corporation should be encouraged to make these improvements, and so long as it furnishes proper and adequate service, should be permitted to earn a reasonable return on its investment.

It should be the aim of regulation to enable corporations,

through the fair valuation of their properties and through a fair return on their value to make investment in their securities safe and attractive. Here the interest of the public and the interest of the corporation are one and the same.

In a word, the public needs the utility corporations and is as much interested in their ability to properly discharge their duties as are the corporations in turn interested in the welfare and development of the localities they serve.

I believe that under public service commission regulation the securities of a corporation having an established earning capacity, a capitalization within the limits of a fair and reasonable valuation of its property and under specific requirements for setting aside annually from operating revenues, proper allowances for renewals and replacements, should prove safe and desirable investments.

It is well established that proper regulation of these properties has already created a feeling of increased confidence in investment circles. I have noticed with interest for some time past the more favorable attitude of the Investment Bankers Association and other investment interests toward public utility securities. Also, that financial houses in making offerings of securities now almost invariably, I might say, wherever possible, make and emphasize the statement "approved by the Public Service Commission."

THE MAKING AND MAINTENANCE OF PRICED INVENTORIES OF PUBLIC UTILITIES

BY CHARLES L. PILLSBURY

Chief Engineer, Valuation Bureau, Public Utilities Commission, District of Columbia

MANY elements enter into that vague and indefinite quality, value—of public utility properties. Many moot principles are involved and are likely to continue to be involved for some time to come. Few, indeed, of the host of economists, engineers, lawyers and public utility specialists, constantly grappling with the problems, are so sanguine as to predict any general clarification of the subject before the lapse of years, with even the main principles well settled in equity and law.

Under such circumstances, it is not at all surprising, though none the less unfortunate, that great lack of uniformity, and agreement as to methods, now pervades practically all phases of the intricate, laborious and costly processes of setting up value, and especially of that most laborious process, the making and pricing of inventories. Much unnecessary duplication and many economic wastes are involved which in the end the public must pay for. One of the most important services which this Utilities Bureau can perform is that of helping to bring into the open and, so far as practicable, standardize methods of procedure. It is with

this idea in view, as to inventories, that this paper is prepared.

The purpose of this paper is to call attention to a few of the basic features of the making and pricing of inventories: the lack of uniform methods and standardization; the economic wastes of duplication, repetition and lack of uniformity; the detail submitted and submerged; the futility of attempting to compare the items or costs of one with another without a specific knowledge of all of the facts involved; and the desirability of the making of inventories so that they can and will be maintained. The subject is very broad and any attempt at specific discussion of all of these matters, or of the detail of inventory making, would be presumptuous and impracticable here. The making of a valuation may be likened to the tracing of a tall and spreading tree; no matter which branch we take at each succeeding fork another fork lies just ahead. The idea here is only to call attention, largely indirectly or by suggestion under more or less specific headings, to the matters referred to, in the hope that discussion and perhaps future more specific papers by others may bring forth fruitful results.

PURPOSE OF VALUATION AND INVENTORY

Inventories of mercantile establishments and industrial plants are made for the purpose of finding the worth of the owner, as an adjunct to the annual balance sheet; for the guidance of investors in stock and bonds; for establishing and maintaining credit; as a basis for sale, consolidation or liquidation of debts; as a basis for economic management; for insurance adjustment, etc.

Valuations and inventories of public utility properties are made for a number of purposes which have been generalized as:

1. Purchase, transfer or consolidation.
2. Franchise and other public negotiations.
3. Capitalization or issuance and approval of securities.
4. Rate adjustment.
5. Taxation.
6. Corporate expediency.

The first five purposes are generally understood. The sixth, corporate expediency, has been almost universally underestimated by both the public and the corporations. A properly compiled basic inventory and valuation may, with adjustments, be adapted to many special uses of great advantage to the owner, as for instance the following (based on a recent utterance of Mr. H. P. Gillette):

A. Guidance of investors in stock and bonds.

B. Guidance of holding companies and of managers in comparing operating statistics, costs and earnings of one plant with another.

C. Guidance of management, purchasing and engineering departments in detecting and avoiding errors of design, purchase and construction, and by providing for quick reference, intimate details of all parts of the property.

D. As a basis for estimating accrued depreciation and more especially depreciation reserve.

E. As a guide to the purchasing, accounting and engineering departments in setting up and maintaining proper analyses of costs.

F. As a basis for insurance adjustments.

It would certainly appear that the usages are more varied, and, on the whole, more important in the case of public utilities than in the case of industrials. In the latter only the management, debtors and creditors have an interest; in the former, these interests should be as great, and there is also the most important public

interest as well. And yet the need of the making and maintenance of industrial inventories has long been recognized, while, on the other hand, public utility inventories have in too many cases been studiously avoided as unnecessary evils. These differing attitudes are, doubtless, due in part to the much greater complexity and indefiniteness of public utility inventories and valuations. The more or less unity of interests in industrial appraisals eliminates the array of acute moot principles which, by reason of the public interest, are involved in public utility appraisals. And, furthermore, the intricatenesses of the properties themselves and especially of the complex labor items involved, are, in general, vastly less in the case of industrials. Still

again, since litigation affecting confiscation of property is seldom involved in industrial appraisals, usually much less detail is required.

Referring now to public utility valuation, we are confronted with the fact that both the value to be derived and the property to be included depend upon the specific purpose of the valuation. Since both property and value will vary with the different purposes it is essential that the appraiser has, at the outset, a clear understanding of

First: The purpose of the investigation, and

Second: The application of the inventory.

Upon the purpose of the investigation will depend the property to be included and excluded and the character of the value or "amount" finally to be ascertained. Upon the specific application of the inventory in the process of finding value will depend the details of the inventory and the nature of the individual costs or values to be assigned to it.

The appraiser must first, therefore, have a clear conception of the limitations with respect to each valuation purpose. If, for instance the valuation is for the purpose of a rate adjustment, then the property is to be limited to that "used and useful in the service of the public," and a clear conception must be had as to what is used and useful and what is not. An excessively overbuilt plant, for instance, unnecessarily large for present and near future use, may not in entirety be a basis for rates and a certain portion of such property or of the value thereof may be excluded. Land in excess of that actually in use may or may not be useful. It may or may not represent wise and strategic purchase

PART IX

THE MAKING AND MAINTENANCE OF PRICED INVENTORIES

WASTES IN INVENTORING

THE NEED FOR STANDARDIZATION

THE MAKING OF INVENTORIES

THE MAINTENANCE OF INVENTORIES

SOME ESSENTIALS OF APPRAISAL WORK

ORGANIZATION AND CLASSIFICATION

OVERHEAD CHARGES

CO-OPERATION IN MAKING INVENTORIES

THE IMPORTANCE OF MAINTAINING PRICED INVENTORIES

for future need. Many such questions pertaining to property to be included and excluded must be held in mind and analyzed, but, regardless of the nature of the investigation, all physical property should, nevertheless, be inventoried—inventoried and then segregated into property included and excluded respectively. This for two reasons: *First*, so that the report will show clearly what has been included and what excluded, the reasons therefor, and the detailed nature and extent of both; thus enabling full consideration to be given to these matters in the final determination of “fair value” or “fair amount” for the purpose in hand. *Second*, so that the inventory may to the fullest extent justify its costs; that is, so that it may later on, as nearly as possible, be adapted to any of the possible usages and be maintained to that end.

Aside from the immediate purpose of the valuation, the inventory itself may be applied, in the process of finding value, in several ways, as for instance:

1. As an adjunct to an investigation from the books and records of the company, of actual cost or so-called historical cost or investment.

2. For the purpose of estimating past cost by applying to the present inventory actual and estimated costs of the past, corresponding to the respective periods of actual construction.

3. For the purpose of attempting to directly derive fair value for the purpose in hand according to the theory or belief of the appraiser by distinctly following neither actual cost nor estimated actual cost nor cost of reproduction, but by assuming modifications of any or all of these elements of value, based on engineering, legal or economic considerations.

1. *Actual Cost Method.* All actual cost investigations from the books and records should be supplemented by inventories of the physical properties. The books and records, even if containing complete cost or investment accounts which is rare, seldom, if ever, contain a specific record in requisite detail of the property owned or of the property now “used and useful in the service of the public,” nor sufficient information upon which to determine that most perplexing question, depreciation. Nor sufficient proof of the true net costs without some verification by estimate.

Such an inventory should be made jointly with, or so as to harmonize with, the accounting investigation. The detail need only be to such extent as the book costs are detailed or as necessary for identification and verification. Such an inventory is usually comparatively simple. It will be of little or no value for other purposes.

2. *Estimated Past Cost Method.* Priced inventories of existing properties are, so far, seldom used as a basis for estimating past costs, although this method is

advocated by many. The necessary detail and arrangement of such an inventory will depend largely upon the nature and details of the actual costs known and those to be estimated. If prepared specifically for this purpose, the inventory will usually be of little value for other purposes.

3. *Cost of Reproduction Method.* The principal use to date of inventory in valuing public utilities is that of cost of reproduction. It seems at present to be pretty well established in law that cost of reproduction is a necessary and pertinent element in the determination of value. In many cases it has been taken as the prepondering element, although in such cases undoubtedly given greater weight than would have obtained had actual cost been capable of more accurate determination. The importance of cost of reproduction as an element of value as indicated by the acts of Congress with respect to the stupendous task of valuing the common carriers now under way by the Interstate Commerce Commission, and also with respect to the valuation of the public utilities of the District of Columbia under the Public Utilities Commission of the District, cost of reproduction as well as actual cost and other elements being specifically required by the acts.

A cost of reproduction inventory properly detailed and segregated may, with modifications, be adapted to many other purposes.

4. *Modification Method.* Application four (the attempt on the part of the appraiser to derive fair value directly) is not to be advocated except for the purpose of approximation only, and only in cases not involving court litigation over the matter of confiscation of property. And when adopted as a modification of cost of reproduction, it is far better to set up cost of reproduction in entirety, and then apply the advocated modifications and substitutions and give the reasons therefor. The result is much more apt to be logical and fair and the modifications are then open for review by others, and, furthermore, the inventory can then best be maintained for other usages.

This may not be clear. My idea is that so long as it seems to be established in law (through precedence of court decision or otherwise) that the fair value or amount to be derived involves, among other elements *cost of reproduction* as well as *actual cost*, as distinct elements of value the appraiser should first set up as distinctly as possible these separate elements. And then if it so happens that he is also to perform the judicial functions of arriving at fair value or amount for the purpose in hand or is to express his opinion of such fair value this judicial process on his part of substitution, elimination, enhancement, etc., should follow. He should not still further confuse an already too confused matter by following his own dictates throughout

the entire process of appraisal and valuation. Such a method merely constitutes a basis for opinion testimony.

If cost of reproduction is the purpose of the inventory, then the appraiser must have clearly in mind throughout that he is not ascertaining *value* but merely an important element of value. There would not be so much criticism of cost of reproduction if this basic principle were more generally understood. The prices or monetary figures to be applied to the inventory items and groups of items are not therefore to represent values, nor past costs, nor even present costs, except where such costs coincide with costs of reproduction. The appraiser must conceive of a logical and humanly possible process of reproduction and he must be consistent throughout.

PRELIMINARY INVESTIGATION

At the outset of any inventory and appraisal of a public utility property for any purpose, the appraiser should acquaint himself, as thoroughly as possible, with the extent, location, and general character of the property, its physical (and when possible, its financial) history, its mode of operation and its special peculiarities.

The proper organization, program of procedure, and grouping of items will depend largely upon such preliminary study.

CO-OPERATION

All inventories for public purpose should be the result of frank, sincere and friendly co-operation between the corporation and the public. This particularly applies to the unpriced inventory of physical property, and, in most cases, many of the base costs at least to be applied to the inventory can and should be established jointly. The inventory of physical items should be a matter of fact, not of controversy. There is no reason, other than those born of distrust or antagonism on the part of the parties at issue, or selfish motives on the part of engineers and attorneys, why a rate case, for instance, should be complicated and delayed by, and burdened with the heavy excess cost of litigation over such matters as the number of brick in a given building or the pounds of copper in an electrical system. These are matters of fact, and where the facts are somewhat difficult of ascertainment, in nine cases out of ten, the matter would be settled more fairly to both parties and with vastly less expenditure of time and money if adjudicated in the field instead of in a court of law or at a commission hearing.

Appraisals can be made, and are being made, for the public with complete lack of company co-operation, but such cases are rare. When encountered, and especially where the property is comparatively large and intricate and available records vague and incomplete, as is usually

the case, a detailed appraisal is only made at great sacrifice of time and expense and with much liability of error.

As a matter of fact, nearly all fairly made and reasonably accurate public appraisals are more or less dependent upon partial company co-operation. It is certainly better to have full co-operation than for either side to base any of its conclusions on half-hearted and suspicious partial co-operation with facts half revealed and half concealed.

It is not necessary in such co-operation that an arbitrator be appointed. Most questionable matters of inventory and *basic* features and facts of unit costs will be quickly and fairly settled by the respective engineers in charge. And such matters as can not be readily settled in this manner may well be set up differently by the two parties for final adjudication. A vast number of the items will at least have been eliminated from final disagreement and the inventories will in all respects be on a directly comparable basis.

The usual independent, dissimilar, competitive inventories result in excessive economic waste by reason of:

First: Duplication of cost of inspection and compilation.

Second: Added cost of laborious and difficult checking and defending of inventories prepared on different bases both as to property and costs and with different itemization, grouping and arrangement.

Third: Unnecessary detail of each in order that it may equal or outweigh the other.

This economic waste is borne entirely by the public. The public pays directly for its own portion and the rate payers in the end pay the company's costs.

ORGANIZATION

Proper organization is of prime importance. The size and character of the organization will naturally depend upon the size and character of the property to be appraised, but in most comparatively large undertakings the varied nature and intricateness of the property will require specialization and the division of the work into certain natural engineering divisions such as, for illustration, track and roadway, buildings and structures, rolling stock, power plant and substation equipment, electrical distribution, cost analysis, etc., together with a statistical and clerical department, and an accounting force.

Cost data should be compiled largely by the respective departments, in order to utilize to the fullest extent specialized knowledge and experience, but, so far as practicable, should be finally analyzed, compared, arranged and filed by a cost analysis department, which department should especially interest itself in all costs

which are of general application, applying to several departments or divisions of the work, thus so far as practicable unifying the whole and avoiding discrepancies.

It is of the utmost importance that the organization not only be fitted for the work individually but also work harmoniously as a unit, toward one end, and with frequent interchange of ideas so as to insure a broad view point and an unbiased attitude throughout.

With any organization specific and detailed instructions are necessary at the outset in order that sharp lines of demarkation may be drawn between the work of the different departments, thus avoiding duplication and omission. Thorough systematization of the entire work is, of course, a necessity, as the details to be handled in a large undertaking of this character are almost beyond belief in number and intricateness.

CLASSIFICATION

It is very essential that the inventory and valuation be compiled, filed and finally set forth in logical, orderly and systematic manner. The first requisite of this is the division of the property into specified classifications. These classifications should correspond with the capital account classifications of a proper accounting system. Uniform classification for similar properties is highly desirable in order that proper comparisons may be made both as to accounting and operating records, and as to appraisals of different companies.

The Interstate Commerce Commission has prescribed classifications for all common carriers, and for the public utilities of the District of Columbia, and the various State Commissions have prescribed classifications for the utilities operating in their respective states. Unfortunately, these various classifications are not uniform. Standardization should begin here.

SECTIONS

The property under each classification should, for convenience in inventorying, be divided into sections according to location. Classifications pertaining to power plants, for instance, should be so divided as to set forth the details and totals separately for each plant and each natural division of plant. The matter of sectionalizing is particularly important in the case of large track systems, electrical distribution systems, and other property covering considerable area with no definite natural location divisions. The underground electrical distribution system in a large city, embracing thousands of manholes and many miles of conduit and cables interlaced into a complicated net work with no natural lines of demarkation, would be exceedingly difficult to inventory in the field, without omission and duplication, unless first arbitrarily divided into many

small sections, comparatively simple individually, and with all limits clearly and sharply defined.

The permanent value of an inventory and the ease of an incentive to its maintenance will greatly depend upon the sectionalizing of the various property classifications.

RELATIONSHIP OF ITEMS

Great care must be exercised in determining the division of classification section into items and the relationship of the items to each other. Both costs and depreciation must be kept in mind. The relationship must be commensurate with actual construction process and with such processes as would obtain in the reproduction conceived. The items and their relationship must harmonize with the analyses of costs and the unit costs derived. The division and arrangement should be such as to facilitate accurate depreciation calculations without rearrangement for the purpose. Items which depreciate differently should, therefore, so far as practicable, be set forth independently, and, where practicable, age, also, should be taken into account in the separation of items. The importance of division and arrangement from the standpoint of depreciation is too often overlooked, especially by the companies. Even if the intention of the appraiser is to make no deduction from cost of reproduction for accrued depreciation, no one disclaims the need of an annual depreciation reserve and such reserve can be most fairly and accurately calculated, item by item, from a properly arranged inventory.

DETAIL REQUIRED

There is great lack of uniformity as to both the extent and the nature of detailing inventories. Hardly any two appraisals by different parties agree in this regard. Comparisons other than by totals, are therefore very difficult and often practically impossible. The amount of detail desired is a perplexing problem. As a general proposition the greater the detail the greater the accuracy. This is not true *ad infinitum*, however, and, on the other hand, it is true that the cost of the appraisal will increase with the detail involved. The required detail depends upon the nature of the inquiry and the specific use of the inventory in connection therewith. When prepared as "cost of reproduction" for a court case involving the question of confiscation of property, much detail seems to be demanded, and often, in such cases, the extra cost of proper and thorough detail in preparation and presentation of priced inventory will be fully offset by saving in the cost of litigation.

Without doubt, considerable detail can be eliminated when the inventory is made jointly by the two parties at issue.

No definite standardization can be expected, but it would be highly desirable for all concerned if some central organization, interested in such matters, should discuss the subject and suggest certain alternate standards for various purposes and for various classes of property.

Aside from the matter of desired detail in the actual work of compiling the appraisal, there arises the important question of detail to be made public or embodied in the report as submitted, and the further detail to be open for examination and checking in the case of a controversy. How much should actually be made public or submitted in the actual report depends largely upon the nature and circumstances of the case. Generally, considerable detail with the final report is highly desirable. In nearly all cases, practically all of the detail, that is, all quantity detail and all detail unit prices should at least be filed as supplementary evidence ready for use when needed. The all too frequent practice of submitting only results or various totals with the detail submerged or retained as private property of the appraisers, should be heartily discouraged.

As a general proposition, it may be said that a priced inventory, in order to measure up to its full possibilities as to various usages, creates a proper incentive to maintenance and renders maintenance practicable, and, in order that it may be received with favor by both sides to the controversy, should be in such detail and with such explanation that all phases of it may be entirely clear to qualified outside parties, every item of property sufficiently identified so that it may be promptly located in the field and checked, all important characteristics affecting cost set forth and the items to which unit costs are applied sufficiently subdivided so that any unit cost may be checked without laborious effort, or much liability of basing such checking upon wrong premises. In other words, inventories should be based upon the idea of permanence and general usefulness, not merely made for the purpose of establishing an opinion of value or cost on the part of the appraiser.

FORMS

In the actual making of an appraisal, the use of proper detailed printed forms is a matter of the utmost importance. Forms should be such as to indicate clearly the desired data and automatically enforce their logical entry and arrangement with an absolute minimum of writing on the part of the field engineers, and a minimum of editing and transfer in the office. Good field engineers are seldom good writers, especially under the unfavorable conditions of field work, and the time spent in the office in editing, rearranging, compiling and summarizing field data has usually been

a far too large percentage of the total cost, and, besides, each transfer or alteration invites error. Much study devoted to a systematized set of combination forms will be well repaid. The printing is cheap in comparison with the skilled labor saved. So far there is practically no uniform method or standardization in this regard.

CONCEPTUAL PROCESS AND CONDITIONS

Any public utility inventory, both as to items and costs, must depend largely upon the conceptual process upon which it is based. This requires a determination on the part of the appraiser of such moot principles as, piecemeal construction over a long period of time versus wholesale construction as a continuous process throughout a comparatively short period; past versus present topographical conditions, including the hotly contested question of exclusion or inclusion of paving not paid for by the company; construction by the company itself versus construction by contractor, etc.

Whatever the opinion of the appraiser in these matters, a definite, logical and humanly practicable process must be conceived, carried through consistently and fully explained in the report.

COSTS

Lack of uniformity is especially noticeable in the methods employed in deriving, segregating and applying costs and the confusion is aggravated by the fact that seldom, indeed, do inventories or valuation reports contain any specific statements as to the methods upon which the costs are based. As a result, it is extremely difficult and often dangerous to attempt to make any direct comparisons of either so-called unit costs or overhead charges by different appraisers without full consideration of many facts not embodied in the reports.

The proper costs to be applied to the inventory, depend, among other considerations, upon the conceptual process of construction and the assumption as to certain fundamental principles such as:

1. Actual costs.
2. Reproduction costs.
3. Piecemeal construction.
4. Wholesale construction.
5. Time of construction period assumed.
6. Actual prices of materials, apparatus and labor as of the date of the valuation, regardless of whether any or all of such prices may be high or low with respect to normal.
7. Normal prices as of the date of the valuation, determined by averaging fluctuating prices of a certain period of the past or by deriving "trend" therefrom.
8. Construction assumed to be done by the operating utility company itself.

9. Construction assumed to be done by a combined engineering-contracting organization.

10. Construction assumed to be done by various specialized contractors under the direction of designing engineers or the utility company's staff.

The application of these conflicting principles will depend largely upon the purpose of the valuation and the application of the inventory in the process of deriving value, but, even under similar circumstances, considerable difference of opinion exists among appraisers. In general, it would seem most logical that where cost of reproduction, in its strict sense, is being determined as an element of value in contra-distinction to that other principal element, "actual cost," a reasonable, comparatively short period of wholesale continuous construction under present topographical conditions should be assumed, the work should be considered as largely done under contract, and the costs should be based on normal prices as of the date of the valuation.

(The fact that certain elements of cost of reproduction so derived may not constitute elements of the final fair value or fair amount for the purpose in hand does not mitigate against their being true elements of cost of reproduction. Paving, for instance, not paid for by the company can hardly be considered a part of fair value or amount upon which to base rates, but such paving is, nevertheless, a necessary element of cost of reproduction in its strict sense. Its exclusion is a matter involved in the final judicial process of finding fair value. The appraiser in finding cost of reproduction should, therefore, include such paving, but as a separate item, with attention called specifically to it (and to the proportion of overhead charges applying to it) so that it may not be overlooked, but may readily be eliminated in the final determination of fair value or fair amount.)

Cost analysis must harmonize thoroughly with the detailing and grouping of inventory items. Too often this basic principle is lost sight of. Unit costs should, in general, not be built up but should be compiled and checked where possible in total, that is, from corresponding actual cost records, and then analyzed synthetically, or resolved into component elements of cost varying with different applications.

Similar elements of cost vary throughout wide ranges, depending upon location, character of work, and surrounding conditions. First costs of materials and freight will vary with the locality; hauling charges will vary greatly with the inventoried locations; labor rates will vary with the locality; and the amounts of labor involved will vary widely even at the same inventoried location. But if the estimated total costs applying to important individual inventory items are derived from or checked with actual costs under as many varied con-

ditions as possible, and, if then, each element of such costs is carefully analyzed and adapted to the varying conditions encountered in the inventory, the application of varied costs to the inventory should be comparatively simple and accurate.

On the other hand, since so many varying factors enter into them the difficulty of comparing unit prices of different appraisals should be apparent even when the appraisers have followed similar methods of itemizing. But the methods of itemizing also differ considerably. For instance, in some inventories the item written as "concrete" or "concrete work" includes the formwork, in others the formwork is excluded and set forth elsewhere in the inventory. Reinforcing is sometimes included and sometimes treated independently. Likewise, the contractor's indirect cost may be included in the unit cost in one inventory, and set forth elsewhere in another. This is true also of contractor's profits, and, in whole or in part, as to the overhead charges of the owners. Accident insurance, for illustration (quite an important element of cost), may be applied directly to each labor element of the unit costs at the specific rate obtaining in the case, or may be treated as one of the contractor's indirect costs, and, as such, excluded from the unit costs and applied to the total of a group of units, or may be, and often is, treated strictly as an overhead charge.

There is a rather common cause of unit price variation which may be referred to. Certain elements of costs applying more or less generally throughout a valuation are frequently derived and set forth as average percentages and applied at uniform percentage rates to the individual unit costs. Obviously, since each such percentage represents a general average, it is much higher than the actual cost in some cases and correspondingly low in others. In other appraisals these same elements of costs are directly derived for, and specifically applied to, each unit price. The result is that, while the appraisals might agree in total, many of the unit prices will differ through wide limits from this cause alone.

OVERHEAD CHARGES

There has been much controversy and discussion regarding overhead charges partially because of exorbitant amounts or percentages set forth in certain appraisals and claimed by a few companies, and partially because of lack of uniformity in appraisal methods. Overhead charges of one appraisal can no more be compared with those of another than can the unit costs, without full knowledge of the entire valuation bases and methods in the two cases, which knowledge is usually lacking. This lack of uniformity as to those costs frequently set forth as "overhead charges," applies to:

1. Nature of the costs.
2. Amounts or percentages of such costs.
3. Application of such costs in the inventory.

1. Disagreement and controversy as to the inclusion or exclusion from the valuation of overhead cost items of certain natures are to be expected at this stage of unsettled condition of the subject of valuation in general, and will not be discussed here.

2. The amounts or percentages of such costs as are properly to be included will naturally vary somewhat, and sometimes unwisely, according to the attitude or judgment of the appraiser, and to that extent controversy is to be expected. But aside from this, the amounts or percentages will logically and properly vary with the conceptual process, period and continuity of construction assumed, upon which the appraisal as a whole is based. Interest and taxes during construction, engineering, organization for construction, etc., will largely depend upon these factors. One basic assumption may lead to comparatively low unit costs and comparatively high overhead charges, and *vice versa*. Again, the amounts or percentages added for such items as "omissions from inventory," should naturally depend directly upon the care and detail with which the individual divisions of the inventory have been compiled. If, for economical reasons or lack of time, any part of the inventory has been so taken as to lead to omissions, a reasonable percentage must be added.

3. A frequent cause of dissimilarity in the overhead charges, actually shown as such, is due to the fact that there is no general uniformity as to where the line is to be drawn between unit costs or group costs on the one hand, and overhead charges on the other. Contractor's profit, for instance, when included, sometimes appears in the unit costs, sometimes is added to the various subtotals of unit costs, and sometimes is applied at the end strictly as an overhead charge. This is equally true for such items as insurance, contingencies, etc.

For the sake of uniformity, it would seem wise, where construction is assumed to be done under contract, that all charges (costs and profits) of the contractor or contractors should be included in the basic costs of the inventory, and that all other costs which would logically and properly be borne by the owner in connection with construction, be set forth as overhead charges.

MAINTENANCE OF INVENTORY

This subject has been touched upon in several instances in this paper. The various usages hereinbe-

fore referred to are certainly of sufficient importance to render the maintenance of inventories highly desirable to both the public and the corporations. Valuations so far have been mostly mere "flashes in the pan"—most expensive procedures for specific purposes, and then discarded and the process repeated when a need next arises. If inventories are made on the cost of reproduction basis, properly detailed, with not too much transposition and summarizing of items, with all physical property listed and segregated, and with normal prices applied, the inventories can be maintained to advantage and such maintenance should be strongly advocated.

Inventories should be maintained by the operating companies. The public will pay the cost in any case as the inventory maintenance will become an operating cost. A permanent valuation staff should be organized within the company for the purpose, utilizing the managerial, auditing, engineering, purchasing and operating departments, but all under outside direction and supervision. The maintenance of the inventory can be made a much more simple task than is generally assumed. A large proportion of the requisite data for maintenance can be obtained almost automatically and with moderate extra labor, if the printed forms used in the various departments with respect to purchasing, construction, renewals, repairs, etc., are printed with inventory maintenance in mind. Requisitions on the purchasing department, purchasing orders, manufacturers' and dealers' invoices, construction requisitions, work orders, time slips, operating reports, etc., can all be made to convey in concise and simple manner data requisite for the purpose. Inventory maintenance in this manner would result in highly desirable standardization of purchasing and construction methods and cost keeping.

The internal staff alone cannot, however, be relied upon to properly maintain the inventory. As stated above, the work must be under outside direction and supervision: first, direction by an independent specialist in valuation engineering, devoting as much time to the work as may be required, and, second, under the supervision and periodical checking of a qualified representative of the public. No staff wholly within the company, and with inventory maintenance merely a side issue and added burden of each member, will properly maintain the inventory and no such inventory will fulfill the possibilities and justify its cost unless maintained upon some basis satisfactory to the public.

DISCUSSION

BY JAMES W. PHILLIPS

Grade Crossing Division, Bureau of Surveys, Philadelphia

I propose to talk only on one phase of the subject of the making of an inventory. A great deal has been said here this morning about the actual cost and reproduction cost in valuation, but the most important in gaining results, is the making of an inventory of the public utility to be valued, and a great deal more care should be exercised in making it than in its maintenance. The paper that has just been read gives you a general idea of the subject and uses the term "price valuation." An inventory is the same, whether it is to be used for sale, reproduction, rate making or bond issue. It is the foundation upon which to base all valuations, and should be taken and made with the same care of selection as to basic units, whatever end is to be attained. In computing the units, whatever utilities you are making the inventory of, is a question that is different in the different utilities. From the engineering standpoint, it would be best to take all the units going into the structure, of every character, and placing them in tabulated form, in such a way as, when it comes to the appraisal, you will be able to determine the physical depreciation, and base your unit prices as to the physical depreciation of the different items or basic units; that you should have segregated the inventory classifying and grouping them in such a manner so as to readily deter-

mine the unit prices of the valuation, whatever object that valuation may tend or be used for; and also to group it so that both the physical and functional depreciation can be readily taken care of, if any occurs.

The corps, or staff assigned to take the inventory, should be men conversant in every detail of construction and classification of materials, so that they can be properly and rightly classified into units and tabulated for the appraiser. If it happens to be the appraiser of a board of engineers, different from those who take the tabulation and inventory in the field, it should be classified and grouped into units, that it would come to appraisers so that their labors would be facilitated in the proper grouping of the different materials and parts of the utilities company.

After making the inventory, the maintenance—not taking in the accounting, only physical units—is very easily maintained. The inventory in my mind is nothing more than the stock-taking of the old term "stock-taking"; but it has become a very important factor with the utilities companies, that it has considerable importance in the valuation of the different uses which they desire to make of it, as in the rate making, bond issue, reproduction or for sale.

SOME ESSENTIALS OF APPRAISAL WORK

BY F. W. BALLARD

Commissioner and Chief Engineer, Division of Light and Heat, Cleveland, Ohio

Mr. Pillsbury very correctly makes the statement that the cost of reproduction is of great importance in making inventories and valuing public utility properties. In fact, cost of reproduction is the basis upon which financial valuation must be made. In very few cases is it possible to determine what the actual original cost was and even when this is available from records, it would be of far less value than to know the cost of reproduction.

Construction work costs more now than it did a few years ago and is certainly very much higher in cost than it was a great number of years ago, and this is true notwithstanding the fact that improvements and efficiencies in many ways tend toward reduced cost. Yet, on the whole, construction work of almost every character is more expensive now than it has been in years past. This is largely for the reason of higher wages, higher priced material, and, that generally better grades of material are being used. Notwithstanding this, however, reproduction costs are generally found to be less than original costs. The particular reason for this is that in almost every case it is found that public utility properties and also industrial properties have been built on the piecemeal plan. This, of course, has been necessary because

capacity requirements are very seldom as large at the inception of the business as they grow to be later on. Electric light plants, water works plants, electric railway plants, and, in fact, all utility properties are generally found to grow in their demands for capacity and in the extensions of their service lines. Manufacturing plants are generally subject to the same conditions, starting as small concerns with small plants, and as the demands for greater capacity come on, the requirements are met by small additions, so that the ultimate property is found to consist of a small nucleus to which has been added, periodically, additions and extensions that increase the investment cost far beyond what it would have been could the property have been correctly designed. This generally results in the cost of operation, due to the inefficiency of the final arrangement, being much greater than it should be. Increased efficiency and lower production cost would in many cases warrant scrapping the old properties and erecting new and better designed plants.

In starting an inventory for making an appraisal of reproduction costs of any property, whether a public utility or an industrial plant, one does not need to bear in mind the purpose for which the valuation is to be made. The intention

for the moment is to determine two things. What would be the cost of reproduction and what is the present value of the plant; *i.e.*, reproduction cost less depreciation? For this purpose the first thing to do is to make a complete and accurate inventory of the property with all its detailed items properly classified and, with this object in mind, it matters little whether the appraisal is to be made of a utility property or of an industrial plant. The principles governing the method of procedure are the same. The first thing to do is to properly sectionalize the work. If it is a manufacturing plant to be appraised, then the sections generally consist of the different buildings in the property, designated by serial numbers. For a utility property, however, the requirements are somewhat different and, while important buildings should be given section numbers, the property is generally to a large extent spread over the entire area of a city and this area should be divided into sections, the boundaries of which are definitely determined and given the least chance of duplication or omission of items. Under each section number in the inventory should appear lists of the items arranged under the various classifications. In the recapitulation, the amounts of these classifications should be collected under the section headings and arranged in practically the same order in which they appear in the main body of the inventory.

To prepare a proper and correct inventory, great care must be exercised in listing the items. Too great an emphasis cannot be placed upon this requirement. The value of the appraisal will to a large extent depend upon the accuracy of the lists. Listing and pricing of many items should be done by the same person. For instance, no one could place a price upon a pattern or a special tool but the person who had seen it. This is not only true of such extreme cases but is more or less true of all kinds of construction work. The man who does the pricing should have actually seen the thing upon which he attempts to place a value and, moreover, he should be familiar with the cost of doing such work and really should have had experience in just that particular kind of construction.

Condition pricing or listing of depreciation for each item is of next importance and requires considerable experience on the part of the person doing the work. The more complete the information regarding the life of the particular materials under consideration the more accurate and reliable will this part of the work be. Too often condition pricing is mere guess-work based upon no knowledge or experience. All the various items of the different kinds of material involved, the different machines under consideration, must all be judged as to their present value as distinguished from their reproduction costs—the life of a cast iron pipe underground as distinguished from the life of steel or wrought iron pipes, the average life of poles with treated and untreated butts, the average life of weather proof wire, the effect of climatic conditions in various localities upon these materials. The inherent characteristics of various materials of construction and the effect upon the life of the structure must all be taken into consideration. For instance, in buildings the walls of which are built of common clay brick laid in lime

mortar should not be allowed a life of more than from 30 to 40 years, and if such a building is being appraised and it has been in existence for 20 years, it should be placed under a present value of only 50 per cent of the reproduction cost and so through the various items the life of the particular material under consideration with ordinary wear and tear must be known. In addition, the person doing this work must be able to distinguish between what should be considered as ordinary wear and tear and what would be excessive depreciation and should make proper allowance. On the other hand, the life of machinery may be greatly prolonged beyond the average by care and skill in its use and by care in its maintenance. This, also, should be given full consideration in condition pricing.

The inventory of a growing concern, however accurately made, soon becomes of little value for any purpose when repairs, additions, and extensions are being made all the time and in all parts of the property. New structures will be added, new machinery will be installed, extensions and additions of all kinds will be made, items that were very greatly depreciated at the time of the appraisal may be repaired and put in first-class condition or may be entirely renewed, so that after a few years the appraisal may become of almost no value for any purpose whatsoever, unless proper records have been made of all these repairs and additions. It is no ordinary task to properly maintain a priced inventory so as at any time after months or years have elapsed to have it fully as reliable as when first made. A few years ago the writer had charge of making an appraisal of all the property of a large manufacturing concern which had various plants located throughout the United States and Canada with a value of about \$10,000,000. A complete inventory was made of all this property correctly priced with depreciation allowed for all items. The problem of maintaining this appraisal so that, after a lapse of months or years it would be as reliable as when first made, was one of the requirements in connection with the work. The plan followed out for this purpose was as follows:

A complete job order system as an auxiliary to the mechanical and engineering department had been in use for several years. In this job order system all work of any kind whatsoever was carried by jobs ranging from \$10 in value to over \$100,000, and this work was all classified as maintenance or new plant work. These job orders for all the various plants generally numbered between 3,000 and 4,000 per year and, in order to use them as an aid in maintaining the records of the appraisal complete, it was necessary to have a very carefully worked out system by which this could be accomplished. For this purpose every job order when it was issued, would be given such reference numbers and identification marks as would properly classify it under the various sections and classifications of the inventory in regard to the buildings, machinery, etc., so that when the work was complete the cost of the job was not only charged into the proper account, but there was also a record made under the proper classification columns as an addition or appendix to the origi-

nal appraisal sheets that would show the amount of the work, classification to which it belonged, the date when the job was done, a short title or description of the work and reference numbers to the job order files, so that these job orders could always be obtained from which full details in regard to the work would be available. Complete records on separate sheets were maintained in regard to the removal or scrapping of all machinery or equipment and, also, in regard to the razing of old buildings or those which were removed to provide

room for larger or better new buildings. All of this was, of course, written off of plant account and charged to depreciation and was set up as a decrease in valuation to be distinguished from the increase due to new construction. In this way a complete record was kept so that at any time totals could be taken off under the proper classifications through the whole range of the original inventory which was in this way maintained complete in every detail and absolutely up to date every month and every year.

CO-OPERATION IN MAKING INVENTORIES

By R. J. MEIGS

Valuation Engineer, Western Union Telegraph Company, New York City

I have read and listened to Mr. Pillsbury's paper with a great deal of interest, but, as I read it and tried to find a place where I could take hold and prepare some kind of constructive discussion, I was confronted with the condition that as I agree entirely with the things Mr. Pillsbury has set down so clearly, it is almost impossible for me to add very much of a helpful nature. Under these circumstances, I propose to confine myself to the inventory stage and emphasize one thing which is mentioned in the paper, and which I think is one of the most important things to be taken into consideration in connection with the work of inventorying and appraising the property of public utilities. I refer to the necessity for, and the value of, the very closest kind of co-operation between the representatives of the utilities and the representatives of the investigating body; referring, as I am particularly, to investigations which are carried on by the various commissions. Governor Eshleman spoke in a convincing way on this idea of co-operation last night.

If I understand the purposes of The Utilities Bureau, one of the ends to be attained is to bring about an understanding of the various complex matters in connection with the regulation of public utilities, at least so far as such an understanding may be reached; and though I do not find it so stated in the prospectus, I believe you also desire to bring together the men on the two sides of the question who must be charged with the responsibility of bringing about a proper relation between the utilities and the public. If the work of making an inventory and appraisal were absolutely in the hands of the men on each side of the question, who are in supervisory charge of the work, or who direct it, there would, in my opinion, be very few cases which would not be amicably settled, and, I might say, fairly settled, with due regard to the interests of both sides. But it is an unfortunate fact that, no matter how much those of us who are in charge of the work may desire to get at the facts and do the right thing by both sides, it seems to be almost impossible to carry this spirit down through the organization to the men who actually make the inventory, but upon whose judgment we must often rely and by whose acts we so often have to stand.

At the risk of being misunderstood, and with all due respect and regard for the public-spirited men who serve on our various commissions, I want to bring out the fact (for I

believe it is a fact) that, when a commission, municipality, or any other governing body undertakes to investigate the affairs of an individual, or a corporation, human nature at once steps in and the average employee of the investigating body takes the attitude that he, backed by the authority to which he reports, must not be disputed. I might say that it takes much more than the average strength of character to overcome this feeling, which is more or less present in all of us.

I think it may be said, without fear of contradiction, that no inventory and appraisal can be properly made and fairly made unless both sides get together with the idea that they are going to do a good job and a fair job for all concerned, and it is, therefore, incumbent upon us who are in charge of such work to select our subordinates not only for their ability and experience in the particular line of work for which we employ them, but also with a view of their fair-mindedness, and their ability to see both sides of the question as clearly as may be. In the selection of a force for inventory work, we should have a sufficient number of high-grade supervisors who will be always on the alert to see that the men who are actually doing the inventory work are doing a fair and square job. And, again, at the risk of being misunderstood, I want to say I believe that this responsibility rests with the men who are in charge of the work for the investigating body to a greater degree than it does with the men who are representing the corporations. I don't mean by this that the corporation man is always unbiased and the representative of the investigating body is always biased. It might very well be said that the conditions are more in favor of the opposite view for the reason that the representative of the investigating body is not financially interested in the corporation nor is he interested in his own side of the case, except in so far as holding his job is concerned, and his job is usually a temporary one. But I get right back again to the fundamental fact, that we always have human nature to deal with, and the tendency of the man with the whip-hand is to use the whip. As I said before, he must have a strong character to know when and when not to use it.

I believe that most public utilities are anxious to do all they can to assist in any investigations, inventories and appraisals, which are being or will be made by governing

authority. I am sure that I can make the statement, so far as my own company is concerned, without any reservation. All rules have exceptions, but I believe the exceptions in this respect will be very few. When I say that I believe the corporations are anxious to do all they can to help, I do not mean to say that they would, as a rule, go to the expense to do the work in the detail usually required by the commissions if they were not compelled to do it, because, while in many cases the corporations benefit to a certain extent by the information gathered and tabulated, they nevertheless, if they were left to their own devices, could gather and tabulate the information which they themselves need at very much less expense than they are put to by reason of co-operating with the various investigating bodies. But, after all, as Mr. Pillsbury says in his paper, the public will pay the cost in any case; so why should not the corporations do what they can and what they should to insure a proper result?

There are, of course, many complex questions in connection with the inventory of a large, public utility and its subsequent appraisal, which must be settled in some way and for which no definite rules have yet been laid down. Many of these questions are mentioned in Mr. Pillsbury's paper. There are so many different factors to be considered in connection with an inventory and appraisal, and so many different ways in which the inventory and appraisal may be used, that it would seem almost an impossibility, for instance, to lay down definite rules for the determination of such items as the intangibles. But this much can be said: if the parties concerned approach the subject with open minds and in a spirit of fair play, decisions can and will be arrived at.

As Mr. Pillsbury says in his paper, the purpose to which an inventory and appraisal is to be put, will very largely determine the way in which the work must be done, and I want to emphasize the fact that the job would in most cases be very much simplified, the questions involved would be very much more easily settled, and the speed at which the work could be accomplished would be increased, if whenever legislative bodies order an appraisal they would indicate the purpose to which it is to be put. The Interstate Commerce Act, for instance, under which the inventory and appraisal of the property of all common carriers engaged in interstate commerce is now going on, is absolutely silent as to the

purpose of the act, the Interstate Commerce Commission simply being instructed to "investigate, ascertain and report the value of all the property owned or used by every common carrier subject to the provisions of the act." Because of this uncertainty as to the use to which an inventory and appraisal may be put, the only safe course to pursue is to inventory everything and to record it in such a way that the various items may be grouped as desired.

The inventory is, in a way, the simplest part of the work of the appraisal, but unless it is properly done, the appraisal will of necessity be valueless and it is, therefore, very important that the work should be well considered and planned in advance, and that all those who will participate should be thoroughly instructed as to their duties and should above all be men who have had experience with the property to be inventoried. The field parties should be under constant and direct supervision of competent and practical men of sufficient engineering ability and mental capacity to enable them to smooth out such difficulties as will inevitably be encountered in the field work.

It is also very important that the inventory of a large property, extending over a wide territory, should be carried on under the same general plans and that so far as may be, the details of the work will be the same. By this I mean that the work of the investigating authority should be under the general supervision of one competent head who will see to it that the methods adopted are the same for all parts of the plant, that the same instructions are issued and explained in the same way to all. This also holds true of the company organization, where the inventory is a joint one, or where the company participates in the work. Among the greatest difficulties encountered in a large job of this kind are: lack of uniform methods, of uniform understanding of instructions, of a uniform spirit of co-operation, and the failure of some small, but none the less important elements of the organization, to look on the work in a broad-minded way, and attempt to reach conclusions which will be fair for all concerned.

If we can get the right men, give them plain and sensible instructions and intelligent supervision, then all of us approach the work with a spirit of co-operation rather than suspicion, I think we will find most of our troubles have disappeared.

VALUATION BY APPROXIMATION

BY JOHN G. MORSE

Appraiser, Associated Factory Mutual Fire Insurance Companies, Boston, Mass.

THE Factory Mutual Fire Insurance Companies, in the effort to conduct their business on mutual principles, require that each member shall carry insurance amounting to at least 90 per cent of the value of the property insured. As a means of knowing what the values actually are, they have for years maintained in connection with their inspection work, a department devoted to making valuations.

This valuation work has been developed with the end constantly in view of saving time and unnecessary expense by omitting detail and obtaining, as far as possible, accurate factors for simplifying and shortening the work. These factors are based on a vast number of actual figures. That the assured so often use the valuations for cost systems and other book-keeping purposes, as well as for fixing the amount of insurance, is evidence of the satisfactory accuracy of the results. We feel confident, therefore, that dependable valuations can be made by our methods and I have been asked to explain the system and will do so, endeavoring at the same time to prove the uselessness of more extended detail.

THE MOST ELABORATE APPRAISALS REST
LARGELY ON ESTIMATE

It should be borne in mind that no appraisal can be made, regardless of the time and pains taken, without incorporating many figures that are based simply on estimate. Let a building be measured so carefully that the exact amount of materials is known and let it be made positive that the exact cost of each kind of material is known; the amount to allow for waste must be estimated and the amount for labor and all contingent expenses must be estimated. Let the inventory of machinery be made to the last trifling detail, the exact value of only standard machines can be obtained. The value of each special machine must be estimated and the cost for erection of every machine must be estimated. As market values change, the results can-

not remain accurate for any length of time. Then, when the above figures have all been compiled, the amount of depreciation on both buildings and machinery must be estimated, or largely guessed at, before the actual present value is found.

Some engineer once made a statement to the effect that in computing the circumference of a circle, it was useless to carry the result into decimals where the diameter had been obtained by pacing. With similar logic, we claim that it is useless to waste time on minor detail in making an appraisal, if a goodly proportion of the work must of necessity be based on estimate. Moreover, we have proved again and again that the great law of averages counterbalances all minor errors.

AN ACCURATE METHOD
OF APPROXIMATION

The method, as developed in our department, first divides a manufacturing plant into buildings and machinery. To simplify matters, buildings are considered as empty structures. All elevators, piping, wiring and, indeed, anything that can be removed without altering the building, are classed under machinery. Machinery, in its turn, is divided into machines proper, shafting, belting, piping, electric wiring and furniture and miscellaneous apparatus. Special small tools, dies, moulds, lasts, patterns, drawings, etc., are treated independently. The figures for each of the above subjects are based on *replacing new at today's market* (regardless of original cost) and are then depreciated as judgment dictates. I will confine myself to describing our method of obtaining this new value before explaining our rules for depreciation.

THE USELESSNESS OF ELABORATE DETAIL

To begin with the appraisal of buildings, I wish to still further emphasize the uselessness of extended detail. Is the value of a building constructed today, its exact cost? Not necessarily. Let us suppose that you prepare plans and call for competitive bids. One

PART X

MAKING INVENTORIES WORTH
WHAT THEY COST

It is a misnomer to call the method herein described by Mr. Morse as Valuation by Approximation. Certain it is that the greater portion of the so-called valuations put before Public Service Commissions by our serving corporations do not approximate real values in any such direct sense as the methods used by the Associated Factory Mutual Fire Insurance Companies and other industrials. Appraisals made on the common sense lines indicated here are not mere estimates as have been the greater number of valuations worked up by utility corporations. The amount of money now being thus uselessly sunk in valuation procedure is a matter of real concern to the consumers who finally pay for them. If these useless expenses were not so easily shifted to the consumer the utility companies would soon be using as much care and as large portion of facts in their appraisals as these industrial companies are using.

contractor is so eager for the work that he is willing to do it at a figure barely above cost and bids \$45,000. Another contractor is already overcrowded and does not care for the work unless he can obtain a large profit. He bids \$55,000. Others submit figures in between. Let us suppose that you decide to erect two buildings, awarding one contract to the highest bidder and one to the lowest. You obtain two buildings identical in every respect, yet it could not be claimed that one was worth \$55,000 and the other \$45,000. An appraiser who estimated each building worth \$50,000 would be much nearer the truth.

This is still further emphasized in the cost of foundations. Let us suppose that you build two factories for rental. They are alike in every detail and, above ground, cost the same. In building one, a solid ledge is discovered eight or ten feet below grade and the foundations laid thereon at a minimum of expense. In building the other, quicksands are met, necessitating the driving of piles over the entire area, incurring a cost of several thousands in excess of the first. Consider that these two factories have equal facilities in regard to railroad sidings and streets and are the same distance from the business center, the rent charged must be the same, compelling you to be satisfied with a smaller return on the investment for the one with the expensive foundations. If you wish to sell, no prospective customer would recognize this difference in cost and, if inclined to offer more for either, it would be in favor of the less expensive one on account of the foundations being more stable. Most tax assessors, could they learn the cost, would want you to pay the highest tax on the building that gives the lowest net return. An appraiser, however, to give a fair and reasonable estimate must consider the buildings as of the same value.

In making insurance appraisals we do not include cost of foundations as they are not liable to damage from fire but, in cases where the assured wish a separate report on uninsurable property, we invariably estimate the value of foundations at a figure that ought to build them under normal conditions and waste no time in endeavoring to ascertain their actual extent.

THE SQUARE FOOT BASIS FOR ESTIMATING VALUE OF BUILDINGS

The valuations of buildings as made by our department are based on the square foot of floor area. Many architects and engineers use the cubic foot of contents. Both systems are good, but it is floor space rather than cubic contents which gives manufacturing facility, and having adopted one and gathered data on that basis, it is better to confine ourselves to it.

As a groundwork we have used the tables prepared

by Mr. Charles T. Main, the well-known engineer, for brick buildings with plank on timber floors and roofs, one to six stories high, and with a wide range of lengths and widths. It is needless to state that, other things being equal, the price per square foot decreases as the length and width increase. I will repeat that those figures form only a groundwork. They must be changed for different heights of stud, degrees of finish, thickness of wall, etc., and for the constant fluctuations in the market value of labor and materials.

During recent years, particularly the past ten years, numerous different types of construction have come into use—steel frame, many varieties of reinforced concrete, hollow tile, combinations of the above with brick, etc. These are still so new that no settled rule has been developed, as actual costs show no consistency. Promoters of the different systems have taken contracts at absurdly low figures for the sake of establishing examples while, on the other hand, contractors not familiar with a given type have charged exorbitant prices to be sure to protect themselves. If an appraiser should take the time to measure the amount of materials in one of these modern buildings and then try to estimate the cost, he would be more wild in his conclusions than he would be in figuring a standard brick building. We have endeavored to cull out such actual costs as seemed reasonable, apply the square foot method, using the tables to obtain proportionate factors as lengths and widths varied.

METHODS OF MACHINERY INVENTORY

Having shown how the new value of buildings can be accurately ascertained by a comparatively hasty inspection and by quick figuring, I will now describe our method of appraising machinery.

It is our custom to make a complete physical inventory of all fixed machines, enumerating only such dimensions and such abbreviated description as are necessary to determine the value. For a cotton spinning frame, for instance, "one ring frame 256 sp. 3" met. bds. sep." means a ring frame with 256 spindles, 3" gauge with metallic thread boards and separators. "One engine lathe 14 x 6 comp. taper" means an engine lathe with 14-inch swing, 6-foot bed over all, screw cutting, without special gearing, with compound rest and taper attachment. Other special features that materially affect the cost are, of course, noted. In each case the above *brief notes will determine the value just as accurately as half a page of detailed description* with the added advantage that in later perusal of the notes, each machine can be much more readily identified. By adhering to this method, the fixed machines in a large factory can be inventoried in an incredibly short time.

METHOD OF APPRAISAL FROM INVENTORY

All standard machines are appraised by price list. This is possible with the greater part of textile, metal and wood working, shoe machinery and several other types. All special machines, where the owners have no recorded costs, must be estimated. Paper machinery and to a great extent bleachery and rubber mill machinery is built especially and must be appraised from data obtained by experience. The prices used for all machines are then increased from 5 to 10 per cent, as judgment dictates, to cover the cost of freight, cartage and labor of erection. I would not create the impression that we arbitrarily affix prices to all machines. We welcome a conference with the owner in which we can obtain actual costs, bearing in mind, however, that no figure should be incorporated in the appraisal unless we are satisfied that it is reasonable.

Of the value of buildings and contents we find that the value of buildings and fixed machines ordinarily amounts to more than half of the value of the total, if the figures for special small tools, patterns, etc., and stock be temporarily excluded; in some cases much more than half.

Considering that the data for buildings and machines have been obtained in so short a time, it would be inconsistent to spend several times that amount in listing the minor items in fine detail. It is here that we have developed what one might term short cut methods. I will take up the subjects in the order previously mentioned.

SHAFTING

If one were to list every pulley, hanger, etc., and price each item, it would take longer than to do the same work with machines. An amount for erection would still have to be estimated and it would form a far larger proportion than would the figure for erection of machines. The grand total obtained would, however, seldom exceed 5 per cent of the machine value. We simply estimate a price per lineal foot, obtained from actual figures, for the shafting all equipped and erected, varying the factor as conditions warrant.

BELTING

Main belts can be quickly measured by eye. Machine belts, so much per machine, classified into several groups. Wherever we have had a chance to compare our results with a painstaking inventory with tape line measurements, made by the owner, the money value has always been practically the same, due to the before-mentioned law of averages.

PIPING

The subject of piping must be somewhat subdivided. With automatic sprinkler piping, I must emphasize

that it is absolutely foolish to waste time measuring each size of pipe, counting elbows, tees, etc., and then estimating the amount for erection. Every sprinkler contractor risks his chance for profit *by figuring so much per spinkler head* for the work erected and we follow the same method when the number of heads is easily obtainable. In most cases, however, we allow so many cents per square foot of floor area as the result is the same. This applies, of course, only to piping inside the buildings. For steam and hot water heating piping, we use a similar method, except in unusual cases. Gas lighting is not common today, but can be treated in the same manner.

Steam, water, gas, oil and air piping for manufacturing purposes is treated on even broader lines; for a detailed inventory, particularly in the case of a large paper mill or bleachery, would take a prohibitive amount of time. Taking an amount for each machine supplied and using as a cross check so much per horse power for steam and general factors for the others, according to the nature of the plant, a sufficiently accurate result is obtained.

ELECTRIC WIRING

Electric wiring is figured at so much per light and so much per horse power of motors, varying the factors for each variety of light and compiling the horse power in groups as the sizes range from small to large.

FURNITURE AND APPARATUS

The great mass of miscellaneous equipment, exclusive of special small tools, etc., we term furniture and apparatus. In a cotton mill this can be accurately estimated at a price per spindle and in a woolen mill fairly accurately at a price per set of cards.

It is better, if possible, to obtain from the foremen of the different departments, their estimate in round numbers of the amounts of bobbins, spools, boxes, trucks, etc., figure them at market rates and give a quick estimate on benches, tables, racks, etc., in each room. In a metal working plant, it is easy to obtain the total number of tote boxes, cans and trucks; apply a figure per lineal foot to benches and racks and estimate the value of what other miscellany there is. In most plants the total amount of office furniture is not worth as much as the combined value of a few of the most expensive machines and it can be quickly estimated without listing.

SMALL TOOLS

In all machine shops, one meets with special small tools that are worth about so much per producing machine, varying from a small amount in a jobbing repair shop to a high figure in a typewriter, firearms or watch factory. If an appraiser should take his time

to inventory all these items in detail, it would take longer than all the rest of the work, yet he would have no accurate prices to use but would have to estimate the value of each item. A much surer way is to make a broad gauge estimate as above described and then discuss the matter with the owner, making such changes as his records and his judgment seem to warrant. The same method is applied to metal stamping dies. Moulds in a rubber mill can be treated in a similar manner, though usually the owner will have a pretty comprehensive list. Lasts are almost invariably carried on accurate inventory.

The easiest method with foundry patterns is to apply a factor per square foot of shelf area. With drawings, ascertain the number of years it has taken to accumulate the drawings considered of practical value, the number of draftsmen employed each year, apply a price per man that will cover salary and overhead expense and deduct a percentage (agreed to by the owner of the plant) for time spent on experimental work, for the value of a drawing is only the mechanical cost of replacing as all measurements can be obtained from finished machines in existence.

Print rolls in a cloth print works or wall paper factory and dandy rolls in a paper mill are always kept on inventory and their value can be easily determined by consultation with the owner. Electrotypes average so many cents per square inch and being kept on shelves or in drawers, the number of square inches can be quickly estimated. All other extras peculiar to the plant in question can be appraised by some one of the foregoing methods. It is, perhaps, needless to remark that we never attempt to appraise stock and supplies (barring extreme cases) preferring to average the inventories of the owner to obtain the value.

STILL QUICKER METHODS

I have described the short cut methods we usually employ. In cases where a quick rough figure is desired, we simply use a general factor such as per spindle in a cotton mill, per set of cards in a woolen mill, per square foot of floor area or per producing machine in any standard plant.

DEPRECIATION

But after all of the above subjects have been satisfactorily appraised, it matters not whether by long painstaking detail (which I reassert is a waste of time), whether by the shorter method that we employ or whether by the rough general method just described, there remains the great subject of depreciation which has caused more argument and discussion than all the others combined. As it is almost universally conceded that depreciation is deserved if wear has been sustained, I will not take time here to argue that question. The

difference of opinion among men competent to give an opinion as to what percentage should be allowed for depreciation amounts to *more in money value than any error that can be made reasonably*, in estimating the new value, regardless of the method used.

In the case of a second-hand proposition where it is merely an offer to be made for a defunct property, the intended purchaser can simply deduct one half or two thirds or more and the matter is ended. In the case of an owner wanting to carry the value of his plant on his books as an asset and at a conservative figure, it is best to deduct a certain percentage each year and the usual practice is to vary this from 5 to 10 per cent. In many cases, nothing is deducted in a poor year and a large amount is deducted in a good year, but a stated annual amount is undoubtedly better practice.

GOING CONCERN

In making our insurance valuations we have to consider the plant as a going concern and that the machinery, no matter how antiquated, is turning out salable product for the owner. Our depreciations, therefore, represent what in our judgment the machines have really lost in wear and tear or in going out of date and, in per cent of new value, are less than would be applied for any other purpose.

DEPRECIATION OF BUILDINGS

Let us first treat the depreciation on buildings. When one is more than three or four years old, has remained plumb, is kept in repair and is of such dimensions that it perfectly answers the purpose for which it is used, we consider that the depreciation does not increase but stands constant at 5 per cent of total new value for a good many years. When, however, a building in good repair is of such dimensions that it is manifestly out of date and unsuited to obtain best results for its occupancy, we increase the depreciation. Naturally a building not kept in repair is depreciated much more heavily.

DEPRECIATION OF MACHINERY

With machines we vary the depreciation with the class. An engine, or boiler, nearly any textile machine, is used year after year with minor repairs until the time comes when it is thrown out altogether to make room for a new one. In such cases we ascertain the age and deduct an annual percentage varying from 2 to 5 per cent according to the average life of the machine, but seldom carry the total depreciation to a figure beyond 50 per cent. As has been stated, we start with the replacing cost new today and our annual deduction is from the net and not the gross. In bookkeeping the

practice is usually to deduct the annual percentage from the first cost.

There is a vast number of machines, particularly those that are automatic, where the main portion, sometimes as much as 80 per cent of the total value, remains for years with practically no wear, while the small moving parts wear out so rapidly that they are constantly being replaced. With these machines we consider that the wearing parts are always in a state of 50 per cent depreciation and so make the figure on the lot, half of the percentage the wearing parts bear to the whole. In the case of a paper machine that is made up of numerous sections and will vary from 50 to 200 feet long and from \$15,000 to \$125,000, age has very little influence, for, from time to time, whole sections have been removed and replaced, while other parts, one might say, never wear out. Our depreciation in such cases is based entirely on general conditions.

DEPRECIATION OF SHAFTING, ETC.

Shafting shows such slight wear that depreciation is practically never recognized. Main belts wear slowly while machine belts are *always in a state of 50 per cent depreciation* so we, as a rule, consider $33\frac{1}{3}$ per cent a fair average for belting as a whole. Piping, where exposed to acid fumes, disintegrates rapidly, but generally the valves and pipe covering are the only parts that show any appreciable wear. We, therefore, seldom allow a depreciation of more than 10 per cent of the whole. Electric wiring wears little and the rigid rules of both local authorities and insurance companies compel its being kept pretty well up to date so that the total depreciation is always light.

A majority of the objects making up the subject of furniture and apparatus are wearing out all the time and we deduct from 20 to 50 per cent. The same applies to special small tools and dies though here the depreciation is influenced by the proportion of the total that has become out of date. Moulds, lasts, patterns and drawings are affected almost wholly by the latter reason. Print rolls and electrotypes are, like small tools, affected by both.

IN CONCLUSION

I have endeavored to give in as few words as possible a description of the methods we employ that enable us to make an accurate appraisal of a manufacturing property in a very few days of actual field work and a few more of work in the office. I cannot close, however, without making a more definite reference to the system of making inventories in such extreme detail, which system is best illustrated by the work of the appraisal companies. It is, perhaps, needless to explain that as our valuations are made free to the assured, we are not in competition with any one and it is absolutely immaterial to us whether one of these companies is employed or not.

We have had the opportunity again and again to examine the records of such appraisals. Invariably there is a finely prepared volume, giving in minute detail a list of everything on the premises. It is always overburdened with unimportant description that is not necessary to determine value and only serves to confuse one who is searching for individual items. In cases where we have had the time to make a detailed examination, we have always found the usual proportion *based on estimate only* and errors large enough to counterbalance the value of whole pages of minor items so laboriously collected. These errors do not materially affect the final result, as the law of averages takes care of that, and *it leaves the final figures no more accurate than those of our appraisal made by a shorter method.*

The claim is made that the courts will not recognize an appraisal unless made in fine detail. I think, however, it would take very little effort to demonstrate to any court, the large extent to which estimate had entered into any appraisal and that an appraisal *made on broad common sense lines can be just as accurate as one made in great detail.*

Our valuations are not made for cases before the court and personally I have been able to avoid mixing in such arguments. Two of my associates, however, have had to give testimony based on appraisals they had made by our methods and the results were in each case satisfactory.

DISCUSSION

BY ALEXANDER POTTER

Consulting and Constructing Engineer, New York City

The author's paper deals with one special phase of the subject of valuation of properties, namely, the determination of the commercial physical value of factories.

The writer not only agrees with the author that "valuation by approximation" is possible in such cases as are specially

referred to in the author's paper, but he is of the opinion that "valuation by approximation" might very properly be extended to include the determination of present values of works of greater magnitude than factory buildings and machinery.

It cannot well be gainsaid that many of the important appraisals and valuations now being conducted in connection with the various railroads throughout the country are involving so much detailed examination and survey that the time required for this investigation as well as the time that will be required for conferences between the representatives of the government and the railroads, not to mention the time and delay of court proceedings that will ultimately follow in connection therewith, renders such valuations more or less valueless because of changes in conditions between the time that the work was started and when finally adjudicated by the courts.

It would seem to the writer, therefore, that an effort to procure "valuation by approximation" by determining some general relationship between the factors which tend to reduce the actual value of the plant, such as depreciation, and those factors which tend to increase the actual value of the plant, such as going concern, interest during construction, development charges, etc., is justifiable, and if such a relationship can be established, even though it might be approximate, the time element and the expense of the valuation itself thus saved will oftentimes be more important factors than the

refinements in valuation which can be brought about by an additional expenditure of time and the employment of high-priced experts on behalf of the government and the private corporations.

In cases of valuation upon which the writer has been retained there has, in fact, existed a certain relation between these two sets of factors. The ratio, while not always the same, has been so approximately the same as to raise in his mind the question whether or not substantial justice could not be done to both parties by the application of "valuation by approximation." There are so many commissions now at work on valuing railroad properties and water works and other large utilities that from these valuations now going on sufficient data could be procured to establish the truth or falsity of the statement that a ratio can be so fixed that in the future such expensive valuations as are now in progress can be avoided and results, approximately as reliable, secured.

The saving that will result if this theory is true warrants an investigation on the part of some central organization, such as The Utilities Bureau, under whose auspices the valuable symposium of papers on the valuation of public utilities has been prepared.

DISCUSSION

MORRIS LLEWELLYN COOKE

Director of Public Works, Philadelphia

While being an absolute layman in this matter of inventories I have had two contacts with the subject which perhaps warrant me in taking a few minutes of your time. Owing to my being an industrial engineer I have had more than an ordinary opportunity to judge the attitude of the average manufacturer toward his inventory. On the other hand, as Director of Public Works, I have seen at close range the attitude of the owners of public utilities towards the valuation of their properties. The views of the manufacturer and the public utility owner are absolutely dissimilar. I have always thought that in a manufacturing plant the importance of the inventory was underestimated. It is almost impossible, in an industrial plant,—at least in those with which I have been associated—to have the inventory properly maintained, or even viewed with any considerable respect. There is very little attention paid to it or interest taken in it.

On the other hand, with the utilities, as I have come in contact with them, *too much* of the whole problem is wrapped up in the question of valuation. Now, of course, in my position, it has been necessary for me to assume almost the position of appearing to combat these valuations. Especially in the case of the Philadelphia Electric Company I have been forced to oppose strenuously what appears to be a highly inflated valuation. Now, I have no disposition, at least I hope I have none, to fight the truth. But it does seem to me that the truth in the matter of the valuations of utilities is usually led in somewhat shackled.

There is one difference between an industrial valuation

and a utility valuation that, of course, we must recognize. The total income of the Philadelphia Electric Company during the year is about \$8,000,000 so that, taking a low valuation, 20 to 30 millions, or a valuation that is nearly what the city thinks it ought to be, their total income is only one third to one quarter of such valuation. If you accept the valuation that possibly may be put upon it by the typical valuation engineer, it would still be one fifth or one sixth of it. Now I know of no industrial operation where the total gross income represents such a relatively small proportion of the total value of the plant. This is one good reason that you apparently cannot argue away as to why the utilities should spend more time on this feature of the inventory and why they place so much importance upon it.

The uses of the industrial inventory, as I see it, are two: first, for the balance-sheet in order to be able to put a little book under your arm once in a while and go down to the bank and make a convincing demonstration; and the other, is to make it possible to obtain accurate costs. The utility has this first use for an inventory, *i.e.*, for the purposes of the balance-sheet including rate making, borrowing money, issuing securities, etc. But up to date practically no utility company has used its inventory to get costs. I know that this remark will be resented by those administering our utilities. Broadly speaking, however, there is no such thing as cost-keeping in the utility field today. The fact that there is one company that has a very splendid system of costs and that there are, perhaps, 3 to 5 per cent of them that are feeling their way toward a proper system of costs,

can hardly be taken as invalidating the general statement as to the absence of cost work.

So that any claim on the part of the utilities as to the necessity of a particular scheme of making valuations on account of its effect upon cost-keeping, is not worth very much from an industrial or an economic standpoint. As a matter of fact the utility companies do not recognize the necessity for cost-keeping and they have no adequate conception of what costs are. I hope those of you who do not agree with me on that point will be kind to me in your judgments; because I am quite sure if I had the opportunity I could demonstrate that what I have said is true.

Now let me say a word as to this question of detail in making inventories and appraisals. Within a month I have had the opportunity of going over a recently compiled valuation of an important utility property; I was surprised to see one item in that valuation. True, it may not be typical; but it certainly fairly represents a tendency. The appraisers had gone into a power plant to inventory that power plant and had measured one 4-foot section of 2-inch pipe, and then they had appraised separately, not only the section of pipe itself, but the two threads on either end of that piece of pipe—the latter at 18 cents each. Now, can you beat that? It is like inventorying this room by counting the number of boards in the floor, or, perhaps, the particles of plaster on the wall.

It is only fair to state that if one party to the issue starts inventorying in such detail the other side is forced to do it. In other words, if any public or private interest in this matter starts to inventory in any such detail as that, under present-day conditions, it will probably be necessary for the opposing interest to do the same. If they get to a clash on any particular point, each will thus have the material with which to meet the other's argument.

Another tendency in this field that seems to me to be absolutely wrong is the unwillingness of valuation engineers to produce the supporting data on which details of valuations are made. There are cases on record where valuation engineers have gone into the power plant and other parts of the physical property, and have listed things with the greatest—almost a disgusting amount—of detail, and then not only put in a lump sum in the appraisal but when the supporting details were called for refused to give them.

I think every speaker on this subject has claimed that it is necessary to know for what purpose an inventory is being made. This seems to me to be fundamentally wrong. In making an inventory of an industrial plant, you list everything in it, and put a value on it. Then for one use you take one group of those values, and for another use you take another group. For instance, after you have ascertained the value of the power plant in a printing establishment you determine its bearing on the work of the different departments. You will find out, for instance, that in your type-setting department, where there is very little power used, the cost factor attributable to the power plant is almost negligible. In the press room, however, where the power is a big factor, it has that much more weight. You simply appor-

tion the power-plant expense to the different departments, according to the demands made by them upon it. So it seems to me that in these utility properties we should simply make the inventory and then use that part of it that should be used in connection with each particular inquiry.

I am disposed to disagree with Mr. Pillsbury as to the necessity for outside supervision in the maintenance of inventories. I know that it is a theory with some people that you cannot have anything done right unless it is checked up by somebody from the outside. It seems to me, however, that we want to look forward to building up industrial organizations and utility organizations that can keep up things that we have once decided we want to have kept up, and this without outside help. We must not decri the use of the expert because he may be absolutely necessary in starting these things. To do this we frequently must bring in men from the outside who, like Mr. Pillsbury, are especially qualified on such work. But I don't believe that in the long run inventories and appraisals will be properly made and maintained by the utilities until they have skilled and regular employees who consider it just as much a part of their work to maintain them, and maintain them properly, as it is to maintain other parts of the service and maintain that service properly.

Another point that has been made and with which I heartily disagree is that utility inventories and valuations are more complex than those of the industries. I think it will help clarify this situation if we don't just assume that utility properties are so much more complex than steel works, or printing plants, or any one of a dozen other properties that I might mention.

Just in passing, I want to comment on a remark made by Mr. Meigs this morning. Mr. Meigs said that his difficulty in all these matters was to get the men below him to properly represent his company. I am sure that this must be the case in Mr. Meigs' company. But I think it may be of some value for the purposes of this record to say that all my experience with the utility companies is exactly the opposite. In my relations with the men holding subordinate positions with utility companies I have found every disposition to co-operate with my associates and with me. But too frequently these holders of subordinate positions have not felt warranted in deciding that 2 and 2 makes 4 without disappearing for a half-hour or a week in order to find out whether someone on the third floor or the tenth floor really thought so.

Frankly, up to the time that I received a letter from Mr. John R. Freeman about the work that Mr. Morse had done for the New England Mutuals, I could not see any way out of this valuation maze. We are carrying on a rate case against the Philadelphia Electric Company, in which they admit that the valuation has cost in the neighborhood of \$200,000. Now, to even check intelligently an inventory costing \$200,000 would require the expenditure of a very large sum of money. Our situation in this and similar cases seemed to me perfectly hopeless, unless our city devoted simply to this one matter of combating its utility companies a very much larger percentage of its total income than it had the right to spend on any such object. But Mr. Freeman tells

me that this work that they were doing in his company has cut the cost of inventories from one fifth to one tenth. I think, perhaps, it is a misnomer to call this a method by approximation. The name makes it appear as if it referred to something carelessly done. After all, any method that involves measuring a 4-foot length of 2-inch pipe and estimating at 18 cents each the two threads cut on either end, is a method by approximation. But this latter seems to me to be a method by approximation on a more sensible basis.

I welcome this scheme of the New England Mutuals, and feel that we can all, both on the public and private side, afford to spend a good deal of time, and some of the money that is going into the making of these more attenuated valuations, to see whether we cannot take a leaf out of their book. We must in some way standardize this inventorying and valuating process, to the end that we cut the total expense which is, of course, ultimately borne by the public, and not by the investors in these properties.

CORRECT VALUATION OF OPERATING AND MANAGERIAL METHODS

BY WALTER N. POLAKOV

Consulting Engineer, Stamford, Conn.

The question of physical valuation of public utilities is a fairly recent one and, if I remember it right, when the plank calling for valuation of railroads was in 1908 presented to the Republican National Committee at Chicago, it received but thirty votes out of over one thousand, and was voted down amid jeers and suggestions to "Take it to Denver," "Send it to the Socialists," etc. Nevertheless, several state valuations had been made prior to this date. I think Michigan was first carrying physical valuation of public utilities in 1900 for *taxation purposes*. On February 24, 1913, as you know, the Senate passed the bill calling for valuation of interstate railroads. It does not seem now that anyone associated with the passage of this act did then realize the difficulties and expenses connected with the executions of its provisions. As to what benefits will actually accrue from it, there was even no mention made. Hon. Charles A. Prouty stated before the National Association of Railroad Commissioners at Washington in November, 1914, that the cost of valuation to railroads alone would possibly be \$35,000,000 and to the government about one half as much, making a total of over \$50,000,000. Remember that only a few months before this expense was estimated at \$12,000,000. In other words, while original estimates of valuation cost were from \$10 to \$25 per mile of railroad, now, after the work has begun, Mr. A. P. Russell, Chief of Valuation Department of the N. Y., N. H. & H. R. R. Co. says it is likely to reach \$200 per mile owned or operated of the 250,000 route-miles of railroads of this country.

Now, add to this expense those borne by all other public utilities and try to answer a simple question: "What will be the return on this investment?" Will the freight and passenger tariff be lowered? Will the rates on light and power be reduced? Will the manufacturing cost be lowered?

I am willing to assume that benefits will be great and many. Then the question is simplified—"To what extent the costly refinement and minuteness of valuation work is warranted?" The annual report of the Interstate Commerce Commission for 1912 estimates the value of railroads, their equipment and cash on hand at about \$16,000,000,000. The legal rate of interest on this amount would be for one year \$960,000,000. Now suppose that, owing to cheaper and more approximate methods of valuation, an error would be

made as great as 5 per cent; the interest then would become not \$960,000,000 but either \$912,000,000 or \$1,008,000,000. Now, gentlemen, to make my point clear, compare this grave error of \$48,000,000 a year with \$365,000,000 a year of preventable loss due to operating methods as per Mr. Louis Brandies estimate? Even one eighth of this saving in operation will more than offset all possible harm done by less expensive method of valuation.

Let us take now for another illustration a power plant of a Public Utility Company of 25,000 kw. capacity. Its value is say \$2,500,000, its annual output 160,000,000 kw. hr.

15 per cent fixed charges on assessed value is \$375,000

Operating expense @ .5c per kw. hr. is . . . \$800,000

Suppose that error was made in valuation, then, if its value is:

\$3,000,000 its fixed charge would be \$450,000

\$2,000,000 its fixed charge would be \$300,000

therefore the loss to either company or to the public would be \$75,000.

On the other hand, suppose that because of unstandardized and unscientific methods of operation of this plant cost per kw. hr. is five mills whereas it could and should cost four mills. This spells a loss to the community paying an unjustly high rate for power and light or to the company losing its margin of profit more than it would be if the valuation were 35 per cent in error. The loss to the company from undervaluation of their property is insignificant in comparison to actual losses due to lack of proper operating methods. The subject of correct methods of evaluation of a property is, in my opinion, completely overshadowed by the importance of determining of the proper methods of use of this property.

Ten years of such work in the field of public utilities and central station management did not show me a single case where 25 per cent of operating expenses could not be saved by mere changes of methods without a penny spent for better generating equipment.

What is needed most is the correct valuation of operating and managerial methods in vogue, and the danger in over-estimation of the importance of valuation of property is that it tries to trace old sins instead of preventing the committing of new ones.

OPEN DISCUSSION

DEAN LANGMUIR, *Statistician, Public Service Commission, New York, First District:*

In all the papers and discussions concerning valuation, nothing has been said about the effect of the change in the value of the dollar—and yet the dollar in 1906 is said to differ in value by one half from the dollar of ten years before. There is no good reason why this should be overlooked. It is true, as Mr. Whitten said, that accounts are based strictly on numbers of dollars and that they never indicate changes in the value of money, but the basis of accounting is not necessarily significant.

There is much theorizing as to the methods of obtaining cost to reproduce new and there are deep researches into old records to determine original cost, but not much attention has been given to analyzing and understanding the nature of the difference between the two sets of values, which probably consists largely in the different value of money. For my part, I think that ultimately even staunch advocates of original cost will concede that original cost figures should be adjusted for the changing value of money in so far as this is due to a mere general change in the circulation of gold. Certainly, if corporations fail in their attempt to secure an acceptance of the cost to reproduce new theory, this idea will become of ruling importance and there will be a strong fight to adjust on account of the monetary basis of original cost figures.

If it is desired to remove the element of speculation as much as possible from public utility investment, then a return should be based on the economic value of the investment rather than on the nominal number of coins contributed.

F. W. STEVENS, *General Valuation Counsel, New York Central Lines, New York City:*

Mr. Cooke in his remarks made a statement which, so far as my experience goes, cannot be true at times, as to the attitude towards valuation on the part of public utility men. With such little experience as I have had in the world, I always found it was well to get the other man's point of view—why he did things. We are pretty much alike, after all; and it has been said this morning that if we were in the other fellow's situation we would do about as he does, as a rule.

Now, the Second District Commission of the State of New York, as you know, was one of the early commissions; and it had occasion to value a great many properties. When the commission took office, precisely the feeling which Mr. Cooke has alluded to was found—toward commission appraisals on the part of the utilities men. After a little experience, the public utilities of the Second District of New York were entirely willing to accept the valuations and the appraisals of the commission, without putting any man on it at all. That is true today. I have just asked the chief of the Division of Capitalization if he knew of any exception to that, and he said he did not. Why? Because they discovered that the commission adopted the course

of valuing the public utility on just precisely the same principles as they would a manufacturing plant. They treated the utility on precisely the same principle as they would anybody else. This explains a part of it; and if anybody will adopt that principle in dealing with public utilities I claim he will meet with the same results.

There is another thing: the valuation that is going on at the outset excited a great deal of quiet distrust among railroad men. They didn't know how they were going to be dealt with. And yet, after the valuation had been going on a year or so, I have heard, with very trifling exception, a unanimous verdict on the part of the railroad men: "We are being treated with perfect fairness." Will, or will not, that change the attitude of the public utilities men regarding valuations?

There is a very great misapprehension on the part of many as to the attitude of the railroads regarding the present valuation. I have had a considerable experience in the matter, and I have yet to see a railroad man of any standing or brains who was worrying about the question of rates at all, in regard to this valuation. It is the last thing they are thinking about. There may be some down along the line; I have not seen them yet. I am speaking of my own experience.

What is it they are afraid of? The great systems of the country foresee and know that in the next ten years they must put into railroad construction hundreds of millions of dollars. It is just as inevitable as it is that the earth will turn on its axis. They have to get the money somewhere; and they have to preserve their credit. That is what they are thinking about. They see that next year they have to drop in twenty-five millions in certain places: "How are we going to get that money? Is your valuation going to destroy our credit so that we cannot raise the money?"

There is another thing—I simply say this to get the attitude of what I know to be the railroad men before your minds: there is another thing that faces the men who represent the railroads that I don't think is fully appreciated by those who represent the public, exactly, and I wish you to look at it. Sometimes you may think that they are a little bit insistent on details; and the case that Mr. Cooke mentioned, of course, was a ridiculous absurdity—no man of broad mind has ever done any such thing as that. But what is one to do? I am representing a railroad system. In this valuation, a cent on a tie is a pretty insignificant sum; and any man who will stand and quarrel about a cent on a tie is a pretty small-potato fellow. But on the system which I represent, a cent on a tie represents a half-million dollars. What am I to do? There is a problem I am up against, among others. If I was charged with a lawsuit of half a million dollars by the railroad systems which I am now representing, it would be thought an important matter. Should I throw it away on a cent on a tie, more than in other ways?

JOHN G. MORSE, *Appraiser, Associated Factory Mutual Fire Insurance Companies:*

"I would haggle over a cent in the price of a tie, but having determined the exact value of a tie, I would not bother to count them. I would ascertain the average number of ties per mile of track and multiply that by the number of miles of railroad.

ROBERT L. HALE, *Lecturer in Economics, Columbia University:*

The discussion this afternoon seems to have been directed solely to ascertaining the value of plants. Yet if plants are always to be permitted to earn a return on their value, it was quite clearly demonstrated last night and this morning that you can never reduce earnings. It is only if you are basing earnings on something other than value that there can be any occasion for making a so-called "valuation" for rate making purposes at all.

It may be, however, that an inventory of the value of the different parts of a plant will throw light on the actual cost. Such a method is expensive and inaccurate, as Mr. Stevens and others have pointed out. Is it absolutely essential?

As far as future investments are concerned, it would be quite feasible for the commission to have accurate knowledge of the actual cost, without the use of inventories, by means

of accounting requirements and, perhaps, through control of capitalization. If we should begin at once to keep track of future investments in this way, the only possible use of an inventory for rate making would be to ascertain the cost of investments made prior to now.

Is it important to ascertain the cost of past investments, provided we keep track of the cost of all future ones and of additions to past ones? If the past returns have been excessive, so that the stick has been sold at a price above actual cost, it is rather hard to deprive the buyers at the advanced price of part of their value, without warning. On the other hand, it is hard to compel consumers to pay more than a return on actual cost merely because they had been compelled to pay more in the past. There is no satisfactory escape from this dilemma in dealing with the past situation. Any figure we adopt for past investments will be arbitrary, and while it may be worth while to have some sort of idea of how much the market value exceeds actual cost, or whether it exceeds it at all, still we have no need for very accurate figures. Inventories may be the best way of getting even a rough idea. There is need for adopting at once some figure, however, for existing plants, whether with or without the help of inventories. When such figures are once obtained, there will be no further occasion for inventories, provided we deal with the future on the basis of allowing a fair return on actual cost.

EXPERT (OR OPINION) TESTIMONY IN RATE VALUATION CASES A STUDY IN THE ADMINISTRATION OF JUSTICE

BY JOHN H. GRAY

Professor of Economics, University of Minnesota

INTRODUCTION

THE economic environment of man changes much more rapidly than his understanding of it.

That is, the environment actually changes long before we appreciate the fact of change or acquire any philosophy of it, or any means of adjusting the laws and institutions to it. This means that the rights and duties of different individuals, or groups, are adjusted at any one time to a condition of affairs that has already passed away. Hence, social unrest and agitation. There are certain reasons why such changes in this country, in our day, have been much more rapid than at any other time or place. The extent, richness and variety of our material resources in connection with the vigor and virility of our population have offered an unparalleled rate of change in this country. At the same time, the isolation of our country until recently, the absence of military invasion for more than one hundred years, and the lack of a strong central government, have further intensified these conditions.

Justice Holmes spoke truly when he said that the degree of social peace and happiness in any country, at any time, depends on the width of the gap between actual conditions and the institutions, rules and government arrangements for dealing with these conditions. The *laissez-faire* doctrine, with its worship of competition came into vogue at the advent of the industrial revolution. Under the circumstances just mentioned, this doctrine gave the greatest opportunity in this country that the world has yet seen for accumulation and combination of vast masses of capital. This results in a higher degree of monopoly than is to be found elsewhere. The cause of American preëminence in this regard is the wide use of machinery and the most perfect means of diffusing information and transferring commodities ever created. These forces are cumulative and self-accelerative.

While competition has not entirely disappeared from our economic life, we find ourselves, today, in the midst of an economic era characterized by monopoly. The field of public utilities, including common carriers, is

the most significant and important phase of the gigantic problem of monopoly. This whole important group of industries finds absolutely no place in the social and political philosophies that have dominated the English-speaking world for more than a century; and as yet, in the hurly-burly of an age of wealth and speculation, we find ourselves, at the beginning of the twentieth century, with this problem of problems on our hands and without a theory, or philosophy, or plan, or helpful traditions, or instincts, suitable for dealing with it. We have attacked it piecemeal and spasmodically in a haphazard way, only. We shall make no important step towards the solution of the problem until we realize once for all that it is a new and separate and distinct thing, which at present has no place and can find no place in the philosophy or institutions created to deal with an entirely different and simpler environment — an environment, too, in which the doctrines of competition, individual liberty and freedom of contract, coupled with unlimited right of speculation, are the cornerstones of the system.

REGULATE BECAUSE OF MONOPOLY

The problem of monopoly is the problem of democracy and the heart of the problem is the public utility. Upon the dealing with this question in America will depend the fate of modern civilization.

For something like a generation now, we have declared the industries under observation to be public service industries and, therefore, to be subject to a kind and a degree of public regulation from which private property is exempt. It is, perhaps, unnecessary to state that the distinction is purely a legal, not an economic one. We call these public utilities or public service industries simply because we think they ought to be subject to this higher degree of regulation. But what is there in the nature of these industries themselves that requires severer regulation? The answer is easy. It is the fact that they are monopolies. But this is a purely economic, not a legal, distinction. Furthermore, for the last three hundred years, no English-speaking community has required evidence to prove that unregulated, private monopoly in important matters is intolerable and destructive of civilization.

Let us, for a moment, contrast monopolistic and non-

monopolistic industries. In non-monopolistic industries, competition is a regulator of price, and a safeguard of the consumer. In monopolistic industries there is no natural force to regulate prices and hence none such to protect the consumer. The difficulties, at this point, are greatly increased where, as in the case under consideration, the industry is one of increasing returns. For this fact alone makes attempted competition unequal and totally destructive; when the destruction is complete, monopoly inevitably follows. Hence, in the case of monopoly in private hands, we must either leave interested and greedy men to be economically judges in their own cases, or we must set up an effective outside agency to regulate them.

But it is no safer in economics than in law to make a man judge in his own case. President Taft has said:¹

“The judge who presides over a cause in which he is interested dies in infamy if he is discovered. The citizen who constitutes himself judge in his own cause as against his fellow citizen, and presumes to attack him is a law breaker and as such, disgraced.”

It is by this route that we arrive at the necessity of regulating public utilities. Recurring then to the legal, not the economic side, we have declared through the courts that the utility is entitled to a fair rate of income on the fair value of the property. The judges of our

courts are not economists. The whole doctrine of regulation grew out of the instinctive fear of monopoly. But if the judges had been economists they would long ago have recognized that this doctrine of fair value, although it came from the fear of monopoly, is absolutely inconsistent with the fact of monopoly and with the public interest with which the law clothes these properties. Let us look at this point a little closer.

NO SPECULATIVE GAINS FOR MONOPOLIES

The essence of private property is that the owner is held in check by competition to such a degree that it is safe to allow him the increased value that comes to his property from social progress or otherwise; and that if incidental harm comes from this speculative increase in value, such harm, on the average, is offset by the added energy, effort and thrift caused by the

¹ Cited in, Carnegie Endowment for International Peace, Year Book, 1915, p. 2.

PART XI

OPINION TESTIMONY

“When we come to expert testimony we find, first an unwillingness on the part of the great majority of men of ability to take employment on any terms on behalf of the public. There is great danger that to do so will destroy his professional career. He becomes, in the language of the day and in the opinions of the vested interests, unsafe.

If we bear in mind what I have said about the abuses of expert testimony, the cumbering and lengthening of records, the protracting of trials, and the expense, we can readily see that, speaking practically not technically, justice is actually denied in the vast majority of cases before the cases come to final adjudication by the Supreme Court of the United States. Truly in this field, if ever, justice delayed is justice denied.”

opportunity for speculative gains. But the moment we begin to try to control the utilities because they are monopolies, that moment, if we are consistent, we must see that the speculative element is the key to the situation; that in a public utility it is unthinkable that the private owner should hope for, expect, or receive, any speculative gains whatever. He is economically entitled to a fair compensation for his contribution to the enterprise only and cannot, therefore, economically be allowed the speculative gains included in a fair value. To allow him this legally is in fact to knock the very foundation from under the legal doctrine and basis of regulation. If he may have the speculative value coming from the increase of land values, in the great terminals, and from social progress, he is no longer rendering a public service, but engaged in private speculation in urban real estate. Nor is he longer rendering a service for a fair return. The return is no longer a fair one for his services, but is dependent on the success of private speculation. Economically speaking, the undertaking is no longer what the law calls it, a public utility, for it has by this ruling been reëdowed with all the essential attributes of private property and the statement that it is a public utility is a meaningless legal technicality. A fair value, under such circumstances, has no relation whatever to any contribution or sacrifice the private owner has made, or to any service he has rendered, or is required to render, or is ever likely to render. Is it not a strange circumstance that, forced by the mistakes of the courts in America, we should be pursuing this will-o'-the-wisp in regard to these great arteries of our social and industrial life—the instruments on which our very common life and civilization depend—at the very time when all the rest of the civilized world is moving so rapidly to the conclusion that urban land not used for these (legally) public utilities can no longer be left to unlimited private speculation? For the world, everywhere, except in America, is fast realizing that, by allowing this private speculation in land, we have brought it about that no city of considerable size is a fit place for human habitation. Yet, in law, we proclaim the industries under consideration public, and that their private owners are entitled to a fair return only on the fair value. Legally, therefore, the utilities are entitled to a fair rate on the present speculative value. But to allow them this is entirely inconsistent with the chief economic reasons calling for any regulation. In fact, we took them out of the category of private industries and subjected them to a special regulation in the public interest to avoid this very element of speculative gains included in fair value. In other words, we regulate them solely because they are monopolies. But our doctrine of regulation gives them all the essential

elements of private property, with the speculative gains belonging to private and non-monopolistic industries added thereunto.

Nor must we conclude that this is merely a theoretical consideration of no practical moment. One of the chief organs¹ of vested interests in a recent issue predicts that the unearned increment on the terminals of the New Haven Railroad would more than offset the loss caused by a forced judicial sale of the whole system, should that be brought about. The same journal estimates that, taking the railroads of the country as a whole, from 30 to 40 per cent of the value is in land and that this land is probably worth today \$600,000,000.

SPECULATIVE GAINS ANNUAL REGULATION

The current valuation of the railroads by the Interstate Commerce Commission may be of practical significance in helping us to determine how much is due the public utilities as a result of their past speculation, but can have no importance, whatever, as an aid to future rate regulation. For we are dealing with a monopoly and everybody knows that value in the case of a monopoly in a vitally necessary service depends upon demand at present rates and that the value goes up with the increased effective demand for the service. That is, increased earnings give increased value without limit. Incidentally, it may be remarked that in a growing community, ordinarily *no increase* of rates is necessary to bring about this increased value, but a mere allowing the company to take up the slack from social growth. If, therefore, increased value is a justification for increased rates, in industries as necessary as these are, all the utility has to do is to wait for social growth and the consequent increase in demand. The regulator of value, under such circumstances, is the need of the people for the service accompanied by ability and willingness to pay the price rather than go without the service. This brings us back squarely to rates based, not on regulation as a fair return, but on what the traffic will bear. Under this theory, carried to its logical conclusion, regulating commissions have nothing left to do but to check discrimination. Even the regulation of service, where such regulation lessens profits, is not possible under the doctrine of fair value.

To all those who have followed the representations of the railroads before the Valuation Board, it is very plain that the railroads are massing all their combined resources, financial and intellectual, to get the Interstate Commerce Commission to adopt the doctrine that the "fair value" of *Smythe vs. Ames* means ordinary commercial or exchange value.

¹ *Wall Street Journal*, Oct. 28, 1915.

I have chosen the subject of Expert or (Opinion) Testimony in Valuations for Rate Making purposes merely in order to point out some changes in our theory and methods of valuation which I consider necessary if we are to serve and not to injure the public by regulation.

Smythe vs. Ames, 1898, naturally opened the way for making valuation the basis of rate regulation. The move for valuation originated in the attempt to prevent the companies from claiming rates to pay dividends on watered stock. Whether this was brought to its present dominant influence primarily, as a result of some unwise rulings by the courts, or whether it was forced upon the world by some outside party, I have been unable to learn.¹

RULES OF EVIDENCE HISTORICALLY CONSIDERED

I shall deal primarily with expert testimony before commissions, but in order to keep our bearings on this subject we must remember that, under our constitutional system with its separation of powers and supremacy of courts, the commissions are so thoroughly subject to the courts² that we may properly regard commissions very much in the same class as masters in chancery or as court commissioners, namely, as mere helpers or assistants of the courts. This fact necessitates a summary of the development of our law with special reference to the rules of evidence and methods of proof in different branches of the law.

JUDGE (COMMISSION), JURY AND WITNESS

It is generally known that the strict rules of evidence, as they exist today, are, for the most part, the creation of the last century. And that one of the most important rules, so far as our present purpose is concerned, is that in ordinary judicial matters a lay witness must confine his testimony to matters of knowledge (for the most part to facts perceived by the senses, that is, experiential knowledge) and must not indulge in opin-

¹ So far as my information goes, Prof. John R. Commons was the first to throw the weight of his great influence in favor of making valuation the cornerstone of all regulation. Whether the idea was original with him or came from Senator LaFollette, who afterwards put through the bill for the valuation of the railroads, I do not know.

² *Hammond, J. Fall River Gas Works Co. vs. Board of Gas & Electric Light Commissioners*, 214 Mass. 259, May 23, 1913. "But in acting upon an application (for stock issue) the Board (Commission) is engaged in the performance of a quasi-judicial function and should be moved only by considerations logical to the issue and not inconsistent with the rights of parties. . . . The general question as to the necessity of the issue for the purposes for which it was lawfully authorized, was the same and should be decided upon the same considerations, whether decided in the first case by the corporation itself (and if need be by the court afterwards) or by the Board. There is no change in the question nor of the principles upon which it is to be decided. The only change is in the party deciding it." Cf. Judge McPherson in *Dcs Moines Gas Case*, 199 Fed. 204.

ions, inferences, or judgments based on facts in evidence in the case: the theory being that the jury is the judge of the facts in the case as the judge is of the law.

But we should remember that this function of the jury is itself a creature of the recent separation of functions between judge, jury and witnesses. Until probably about 1700 the jury was not confined wholly to the testimony of witnesses but picked up all the information it could, directly and indirectly. The jurors were from the neighborhood and were supposed to have first-hand personal knowledge of the case. It appears that the members of the jury from about 1500 to 1600, or later, were, from the standpoint of present functions, as much witnesses as jurors. "The Jury were a mere body of triers helping the court." Lord Hale (1680) brought this out in contrasting the common law with the civil law and the canon law, saying, "for the trial is not here by witnesses but by jury."³

Holt, Lord Chief Justice, somewhat later, in speaking of this double function of the jury said, "Therefore less evidence is required than in the civil law." About the same time Dr. Oldish said, "Because the jury are witnesses in reality according to the laws of England being presumed to be *ex viceneto*."⁴

After 1500 the common law courts came more and more to depend on witnesses and it became necessary to lay down more strict rules of evidence and necessarily to differentiate more and more the functions of judge, jury, and witnesses. The change had taken pretty definite form by 1600. But the strictness of the rules of evidence were of much later growth.

Coke, 1622, said,⁵ "It is no satisfaction for a witness to say that 'he thinketh' or 'persuadeth himself' and that for two reasons: first, because the judge is to give an absolute sentence, and for this ought to have a more sure ground than 'thinking,' secondly, the witness cannot be sued for 'perjury.'" (Let us remember this last reason when we come to deal with expert testimony.) He added, "We want what you know, not what you think or believe." That is, the court felt that it could guess as well as a witness could. This was said of lay witnesses, but has its bearing on expert testimony as developed later.

It may be safely concluded, therefore, that so soon as the function of the witness was clearly differentiated from that of the jury the first essential of competency was that the witness should have knowledge (experiential knowledge) and should testify to facts only, and leave the inferences and interpretations to the jury. The later modification of this rule is that lay witnesses may give their opinions, or judgment, where they are

³ *History of the Common Law*, Chap. 12.

⁴ Cited by Wigmore, *Harvard Law Review*, XV, p. 96.

⁵ *Adams vs. Canon*, cited by Wigmore, *Evidence*, § 1917.

otherwise competent witnesses from having had an opportunity to observe and experience pertinent facts, in those cases where the facts on which these judgments or opinions are based are of such a nature as to make it impossible to present them to the jury in such a way that the jury can understand them.

VALUE AND OPINION TESTIMONY

Value was usually regarded as an¹ exception to the opinion rule until recently (except in New Hampshire and New York), but the tendency was to depend on non-skilled witnesses and not to require experience in dealing in real estate (which was the chief object of valuations) as a qualification.

The need of expert witnesses has greatly increased in the last century due to the increasing complexity of the world, caused by the birth of modern science and the industrial revolution. The difficulty is to provide a place for such witnesses under a system of jurisprudence which insisted for centuries that witnesses should testify to facts and not to opinions. Confining ourselves for the moment to jury trials, it was admitted that the jury needed such help,² and that such witnesses did not come under the fact rule. They were regarded as strictly an exception.

LORD MANSFIELD ADMITTED REAL EXPERTS ONLY

Although experts had previously been heard in rare cases,³ largely on purely technical points and as advisers to the court, the opinion rule began to take definite shape under Lord Mansfield, about the middle of the eighteenth century,³ who attempted to show that in matters of science such testimony had such a flavor of fact about it as to justify it. In short, he considered it matter of facts, but of such facts as only an expert, a man scientifically trained in this particular science, could understand.

The particular question was that of the cause of the filling up of a harbor and the expert was an engineer, by whom called does not appear. Lord Mansfield said,⁴ "I cannot believe that where the question is whether a defect arises from a natural or an artificial cause, the opinions of men of science are not to be received.

The cause of the decay of the harbor is also a matter of science. . . . Of this such men as Mr. Smeaton alone can judge. Therefore we are of opinion that his judgment formed on facts, was very proper evidence."

¹ Wigmore, Evidence, § 1943.

² Wigmore, Evidence, § 1917.

³ Judge Hand, Harvard Law Rev. 15, p. 44, says the earliest case of real expert testimony he has been able to find was that of *Alsop vs. Bowtrel*, 1620.

⁴ *Folkes vs. Chadd*, cited by Wigmore, Evidence, § 1917.

By 1800, men of science were generally permitted by way of exception to give opinion testimony. "Though witnesses can in general speak only as to facts, yet in questions of science persons versed in the subject may deliver their opinion upon oath on the case proved by other witnesses."⁵ It will be observed from this that in the beginning when an expert was allowed to express opinions it was on facts presented to the court by lay witnesses. How different this from the present utility witnesses overwhelming the court with new theories of their own.

"At the beginning, therefore, such testimony was considered as a distinct exception to the general rules of evidence and the emphasis was placed on the fact that the opinion of experts must be based on the facts presented by other, or lay, witnesses"⁶ and the facts in the particular case.⁷

Dean Wigmore attempts to draw a hard and sharp line between mere opinion of (lay) witnesses and opinion based on facts within the knowledge of the witness himself, and ascribes the early American hostility to opinion testimony in general to a misinterpretation of Lord Mansfield's dictum in *Carter vs. Boehm* (1766) that, "mere opinion is not evidence" to mean that "opinion is not evidence."⁸

Chief Justice Gibbs (1816)⁸ after saying that Lord Mansfield and Lord Kenyon discountenanced this evidence of opinion, said, "It is not a question of science, in which scientific men will mostly think alike, but a question of opinion, liable to be governed by fancy, and in which the diversity might be endless. Such evidence leads to nothing satisfactory and on that ground ought to be rejected." Is the modern utility expert testimony governed by fancy and is the diversity endless?

As late as 1838 Justice Coleridge, in discussing the admissibility of opinion testimony, said,⁹ "Where you can bring the decision of that question, as you sometimes may, to depend upon deductions from scientific premises you may hear those deductions expressed as opinions by scientific men. The necessity of the case justifies this departure from the general rule; but competency in the main is a question of fact, and the jury are to draw their conclusions from the evidence from the facts before them, not from the opinions which others may have formed from facts not before them." He adds that while inferences by fact witnesses are in

⁵ T. Peake (1801) cited in Wigmore, Evidence, § 1917. Cf. I Espinasse, *Nisi Prius*. N.P. 1st Amer. Ed. to same effect (1801).

⁶ Cited by Wigmore, Evidence, § 1917.

⁷ "Of testimony on value, Wigmore, Evidence, § 715, says "knowledge must be of value in the vicinity." Is this true of expert testimony in rate cases today?

⁸ *Ibid.* § 1917.

⁹ *Wright vs. Tatham*, 5 Cl. & F. 690. Cited in Wigmore, Evidence, § 1917. See also *Carter vs. Boehm* (1766). . . . "We all think the jury ought not pay the least regard to it."

practice admitted, "I am not, however, aware that the question has ever, upon argument, been decided to be correct in form." We may conclude, then, that until about a century ago, the general rule, with the exceptions already noted, excluded opinion testimony. In 1824, the general rule was stated¹ as follows: "The general distinction is this, that the jury must judge of the facts for themselves." So far as experts had been used, by way of exception, they had been confined largely to questions involving handwriting, insanity, and maritime affairs. The American courts even excluded opinions by fact witnesses. The problem did not become one of the first magnitude practically until the last generation when we began to try to regulate public utility rates.

WITNESSES WITH PECUNIARY INTEREST EXCLUDED

There is another phase of the law of evidence which at first blush seems remote from our subject, but which, in view of recent developments in American valuations becomes pertinent. It is well known that, until about the middle of the nineteenth century, in both England and America, no party with a pecuniary interest in a case was admissible as a witness under any circumstances. There is no doubt that the application of this rule in many instances caused miscarriage of justice and that it prevented the bringing of many just causes into court.

The rule was abolished in 1843 in England and began to disappear very slowly in the various American states a little later. The great argument for the abolition was put forth by Jeremy Bentham² in 1827. The bench and bar of both countries long opposed the change of the rule in this, as in the case of all other changes. After the exclusion rule had been abolished they universally lauded the change,³ and declared it one of the greatest reforms ever instituted in the law.

In view of the recent testimony of the defendants in personal damage cases⁴ against public utilities and of expert testimony in valuation cases it may well be questioned whether we do not have here the oft-recurring example of a change in legislation, or other rules, that gives results very different from those anticipated.

But some one may say that, so far, my argument is beside the point, because the public utility cases so far as our present discussion is concerned are not jury

cases at all, but are tried by judges and commissions without a jury. In this view, expert witnesses may be regarded as once more in their early position as mere advisers of the courts (and commissions). Unfortunately, that is not the whole story. The grounds of exclusion for interest and exclusion of opinion both bear on our present question and neither rule, in fact, rested entirely on the ground that the jury was to be judge of the facts. The question of bias and the danger of unnecessarily cumbering the record were important elements in both.

When viewed closely we may find that the reasons which lay back of both these rules, strange as it may seem, at first blush, apply with ever increasing force to the expert testimony, now often the determining factor in public utility cases. But to see the rules in their true light we must treat them separately.

VALUATION EXPERTS SHOULD BE EXCLUDED FOR BIAS

Having already shown that any attempt at valuation defeats genuine rate regulation, I propose now to show that, if we are to have valuation the so-called experts offered by the public utilities are incompetent witnesses. In fact, they are called experts only by a false analogy growing out of a lack of scientific knowledge on the part of the courts.

If we go back to the earlier history of expert witnesses,⁵ the only persons permitted to give skilled or expert testimony were scientific men called to give accepted principles of science. The only justification was, that the court might have information on scientific matters—matters beyond the knowledge and capacity of the court (or jury). Then only men versed in the particular science involved in the case could be called. Usually but a single expert was heard. Such witnesses were called because of their special scientific knowledge of the question at issue. They were supposed to give a scientific, disinterested, impartial statement of settled and accepted principles applicable to the case in hand. The courts always objected strenuously to, and attempted to exclude fancies, mere guesses, and theories not yet generally accepted by science. The courts condemned diversity of expert opinion and spoke often of principles universally accepted by science. These were principles supposed to be worked out in a disinterested way by those devoting their lives to that particular science.

According to Webster's definition "science" is knowledge duly arranged and referred to general truths and principles on which it is founded and from which it is

¹ Starkie Evidence, cited by Wigmore, Evidence, §1917.

² The Rationale of Judicial Evidence, Book IX. Pt. III, C. III.

³ See Wigmore, Evidence, § 576 for list of authorities.

⁴ In a personal damage case against a railroad, a member of this conference, as counsel, expressed his opinion of bias as follows: "it is a general rule that the bell always rings. There is no case on record in which the bell did not ring. . . . One of the stock questions which a railroad manager asks an applicant for employment is 'Does the bell ring?'" Cited in Judicial Proof, Wigmore, p. 394.

⁵ W. L. Foster, 11 Harvard Law Review, p. 185, "He is not a witness in the ordinary sense. . . . His position and office is that of sworn interpreter of science to the court."

derived; "a branch of learning considered as having a certain completeness," and "a systematic and orderly arrangement of knowledge." Furthermore, the same definition states that "science is always disinterested" and "is never engaged like art in productive application." Worcester also says: "and science never is engaged, as art is, in productive application."

Can the so-called utility experts qualify under any part of these definitions?¹ Again, if value is related to any science, it is the science of economics, not that of engineering or accounting, to which the great body of company experts, so called, belong. If these men are pursuing any science and not merely practicing an art, it certainly is not the science of value, nor any other that gives them a right to speak scientifically on value. No body of men calling themselves scientists, or generally reputed to be scientists, has ever, to my knowledge, endorsed or accepted as proved or true the theories of value advocated by these witnesses. In fact, no single economist, so far as I know, has ever accepted the wild and fantastic theories of these witnesses. Nor does the daily life and practice of these high priced gentlemen concern itself with the attempt to find a true conception of value. Their lives are devoted rather to profits, the art of making money.

By no stretch of the imagination could any one say that, in their ordinary vocational life, they are carrying on their work with that disinterestedness said to be required by science, or that they state on the witness stand any conclusions of economic science—the only science devoted to a study of value. As witnesses, they are trying to get some unproved and unscientific theories accepted by the courts—courts that are not economists. Furthermore, the courts even are not trying to find value in a scientific sense, but in a purely technical sense. Within the limits of a hard and inelastic written Constitution, and the limitations of the abstruse technicalities of precedent law, they are merely trying to make decisions which will square with what they regard as sound public policy. Truly, these witnesses may have put in much time in the attempt to foist upon the courts certain theories financially advantageous to them and their employers, but did any one ever accuse these partisans, and advocates, of spending time on, or off, the witness stand in seeking, in a scientific or disinterested way, to find a scientific definition of value? The total absence of any reference to economists or economic literature in their testimony is a sufficient answer to this inquiry. Yet the science of economics is the only one from which they can draw

their principles on this subject, if they have any scientific principles.

Again, I am reasonably familiar with the curricula of schools and colleges in which these men get their training, and, I say, candidly, that with wholly unimportant exceptions, these schools do not teach or pretend to teach, to any considerable extent, the sciences that have to do with wealth or the determining of values. The witnesses, therefore, have never studied the matter scientifically. They are incompetent as expert witnesses; and, under any sound and logical interpretation of the theory on which expert testimony is admissible, they must be excluded. They have just about as much relation to the expounding of the science of value as the hired mercenary troops of the Middle Ages had to the righteousness of the cause for which they fought.

In short, the vast mass of so-called expert testimony in utility rate cases has no relation to any principles accepted by the only group of men regarded by the world as having to do with the scientific study or formulation of theories of value. On the contrary, this testimony is universally regarded as unscientific by economists. The witnesses, therefore, are in no true sense experts on value.

ALSO EXCLUDED FOR INTEREST

But this matter has also direct and important relation to the psychological basis of the rule of exclusion for interest. As already indicated parties having an interest in the case were not admitted as witnesses in either America or England, until about the middle of the nineteenth century. The reason was simply that their interest in the issue was supposed to be such as to bias them to such a degree as to make their testimony misleading if not vicious. If this was true of fact, or lay, witnesses may it not turn out to be doubly true in the case of opinion, or expert, testimony?

Let us recur again to Bentham's famous argument in favor of the abolition of the opinion rule. In insisting that men are not moved entirely by pecuniary interest he asks, "is there no such thing as ambition"; "no such thing as love of power"; "no such thing as party attachment"; "no such thing as gratitude," and implies that men would not be moved by such motives to give biased or false witness. In a highly commercialized age and where men are allied in interest with certain powerful groups, where they are giving opinion testimony only, may not these very motives be the ones that tempt men most to testify against the public interests? Further, do not such motives exercise a much more powerful influence on minds, action and testimony of men than they did when Bentham wrote nearly a century ago?

¹ *Ibid*, 170, citing Campbell, *Ld. C. J.*, in *Palmer Murder Trial*, 1856, "It is in my opinion indispensable to the administration of justice that a witness should not be turned into an advocate nor an advocate into a witness."

Dean John H. Wigmore, probably the greatest authority on evidence, goes into a somewhat remote and ingenious explanation of why the exclusion rule lasted so long, and ascribes it, in brief, to the fact that up to about 1800 men were controlled so much more by their emotions and passions and their partisanship than they are in these latter days. "Today," he says, "they are ruled in their conduct of life by cool reason." That one is often surprised at the risk one would run for pure partisanship, tradition, and sentiment, a century ago is very true. But may it not be, also, true that since the industrial revolution, with the breaking down of personal relations and domestic ties, and the consequent changes in political life, the public interest may be in quite as much danger from the cool, devilish, logical, cunning and planning of cool reason, as from any wild outbreaks of passion or partisanship in previous centuries. We must bear constantly in mind the increasing inequality of wealth and remember how much greater the financial prizes are today, and how much easier it is for all vested interests to combine together than it was in the simpler days. In a commercialized age, may not the cooler and the more rational motives to which Dean Wigmore refers be the means of accomplishing the very thing we are trying to prevent?

GREED OR MERE EMOTION?

It is true that the change from mere emotional to rational action is probably one of the greatest that has come over the world in the intervening century, but does it follow, as he seems to think, that the results so far as the matter we are now discussing are concerned, are wholly favorable to the public interest or conducive to human justice? The great fortunes made possible in an age of machinery, and the concentration of industry, have appealed in a powerful manner to the cool calculation looking toward individual fortune. May not such cool reason be quite as controlling of the individual's conduct, and infinitely more dangerous to the public welfare as the emotional partisan struggle between equals, or near equals, in the days of Burke, Byron, and Shelley? It is rather unfortunate for Dean Wigmore's argument that this attack of Bentham's came at a time when the forces that were making for inequality of fortune and acceleration of motion were on the eve of becoming infinitely more dangerous because of the increased inequality of wealth flowing from the new machinery. If the more rational life lauded by Dean Wigmore spends itself exclusively or largely in acquiring individual fortunes, may not this rational life, in fact, be quite as partisan and as far removed from an appreciation of the public welfare as the emotional partisanship of the eighteenth century? He seems to have an

inkling of this fact when he says, "*that* influence no doubt has in part had its degrading effect in strengthening the calculative, sordid, and commercial, standards of action, but it has also had the effect of establishing, in general, cool reason as the orthodox test of conduct." In fact, it is from the perversion of this very cool, calculating reason that we are now suffering. Until we have defined cool reason, and analyzed some of its results more closely in this connection, we must assume that cool and disinterested reason, where one is giving his testimony for profit only, at so much a day, may lead to highly undesirable results. Furthermore, where one's whole professional life may be determined by the character of his testimony one is quite as likely to be swerved from the line of public duty by cool reason as were our ancestors by mere partisanship and unreasoning passion. In other words, is not a cool, calculating, cunning, nature quite as likely to lead one into bias if the temptation be great, as was the emotional element or partisanship of bygone ages?

In the sixteenth and seventeenth centuries, war was carried on for religious reasons. Today, the nations of the world are grappling in a death struggle for commercial and economic advantage. The early wars may be said to be due to sentimental, abstract and emotional causes. The present one is a matter of pure business calculation and cool reason. Is it less injurious, less bloody, or more desirable, or commendable, for that reason?

Dean Wigmore insists that the exclusion rule was natural enough while the emotions dominated, but has no place in our day. He then pays his respects to the presence of dominant passion today in our South. It may well be questioned, gentlemen, whether the emotions and passions which lead to lynchings and general shootings in the South are more controlling of the life of the individual than the mercenary calculation of our Northern life. Nor is the second line of attack by Dean Wigmore on the exclusion rule, so far as it relates to expert testimony in rate cases, more convincing.

OVERWHELMING JUDGE, JURY, AND COMMISSION

He argues that the exclusion rule remained so late because of what he calls the dead weight of an oath. Namely, the inclination to count witnesses rather than weigh testimony, and to give the verdict to him who had the largest number of witnesses, irrespective of their character, and that this has disappeared under the extended right of cross-examination. This point is highly important and worthy of further consideration.

Let us look at the conditions to which we have come and the relation of these conditions to the public utility

question. We have, in this country, opened the gate to the most uninterrupted pursuit of private gain that the world has ever seen. We have developed the public utilities in private ownership to a greater extent than elsewhere. This means that it is the field of private, not public, employment that offers a professional career for those who have come to act as expert witnesses in valuation cases. The difference between remuneration in public employment in this field and in private employment is so great as to tempt every man who wishes to make a career in this field to refuse public employment, provided he has reason to believe that his testimony on behalf of the public would in anywise be displeasing to the public utilities of the country. We must remember also that the public utilities are allied financially and by sympathy, if not otherwise, with all other vested interests. This makes possible a boycott against any members of the profession giving expert testimony, by the combined vested interests of the country—controlling the gateway to professional employment and advancement. It is, perhaps, needless to remark that here we have the greatest single argument known to the writer in favor of public ownership: namely, in order that we may establish the eternal balance of things, and thus create a class of professional men of standing and real ability who are willing to take professional engagements from public authorities. Nor is this the end of the practical difficulty. What a pity that such men as ex-Commissioner Stevens could not find suitable employment of a scientific and disinterested sort instead of becoming an advocate for the corporations. When we come to expert testimony we find, first an unwillingness on the part of the great majority of men of ability to take employment on any terms on behalf of the public. There is great danger that to do so will destroy his professional career. He becomes, in the language of the day and in the opinions of the vested interests, unsafe. This must always be borne in mind when we come to deal with the right of cross-examination. But this is only the beginning of the difficulty. May not a rising young engineer or accountant be moved quite as powerfully by interest against testifying on behalf of the public in one of these cases as an eighteenth century partisan was moved by pure sentiment or emotion. May not the cool, rational action and calculation of how he is to get on professionally count quite as adversely in regard to bringing out the truth as the mob passions of our South?

HOW THE EXPERT MARKET IS CORNERED

Having virtually cornered the market for talent the utilities have at the start a great advantage. In the next place, being, for essential purposes, all combined, they are willing to pay, and do pay, much larger retain-

ers, or fees, than are paid on behalf of the public. This tends to put in their employment, in any particular valuation case, all of the men bearing well known names and making large incomes from their professions. So if we accept what Dean Wigmore says of the danger from the dead weight of an oath, we find the utilities can, and do, employ more witnesses; we find that they pay each of them better and get men of higher professional reputation. They win out on the basis of the mere dead weight of an oath, if you weigh testimony instead of count witnesses. They have not only a larger number but the better known names and this gives them a great advantage. Being expert, or opinion testimony, there is no danger of conviction for perjury and the judgment of the witnesses is inevitably swayed and virtually controlled by the payment of large fees in the past, and the hope of professional preferment and remuneration in the future. Furthermore, the whole system tends to create sentiment adverse to the public and above all to develop men who worship large fortunes, believe in large industries and despise smaller men and smaller units of industry.

Thus, we come to have a philosophy, not only of life, but of values, advantageous to the utilities rather than to the public. But what check does the right of cross-examination put on this sort of thing? If it is a jury case, the jury under our customs is likely to consist of men of an altogether lower scientific and social rank and status than the expert witnesses and the clients of the witnesses. They are likely, then, to be unduly impressed by the importance and bearing, to say nothing of the numbers, of men who can command for their testimony two or three hundred times as large a remuneration as some of the members of the jury have. This same argument applies in a lesser degree to the judges themselves. It applies also to a significant extent to the case of commissioners where we are dealing with commission rule rather than with courts and juries, so that it is not too much to say that this system of allowing combined wealth to buy or engage all of the available talent at figures far exceeding the pay of judge or jury, already prejudices the case in favor of the utilities. Nor should it be forgotten, in this connection, that, with all of our attempts to break away from the technical judicial trial and turn the regulation of utilities over to administrative officers, our progress in this direction has been small.¹ I question if the weight of an oath centuries ago had more influence on verdicts than the undue influence exercised by the utilities today, in cases where the utilities virtually hire all the experts of wide general repute and so encumber the record that it is virtually impossible for judge, jury, or commission, to so unravel it and to separate fiction from truth as to

¹ *Supra*, note 1, p. 317.

bring before the mind of the tribunal clearly the fact that there is any significant testimony whatever on behalf of the public.

Talk about passion; and take Dean Wigmore's confession that the tribunal trying the Dreyfus case was virtually overwhelmed by the number and rank of the witnesses for the prosecution. Were he writing today, he probably would cite also the disgraceful case of Leo Frank. It may be that the Dreyfus and Frank cases are survivals of the eighteenth centuries—mere emotional partisanship and prejudice. They at least show the difficulty, under certain circumstances, of opening the gates wide to a multitude of well known witnesses all of which, under popular excitement, are on one side and have one reason or another for acquiring that bias which not only makes them incapable of stating the truth, but equally incapable of seeing it. Certain political, or social, or economic views have become so crystallized in their minds as to prevent these witnesses from seeing anything that does not in their opinion help toward a decision in their favor.

The English judges, being much more independent than the American, avoid experts much more than the American. If they hear experts, they keep the number down to a minimum in ordinary cases; and, what is of much more importance, they insist that the experts have a thorough knowledge not so much of theories as of the particular facts—unquestioned facts of the case in hand. That is, they take their opinions on facts furnished by others. They thus try the case on the basis of the facts of that case and not on that of preconceived and unproved theories framed from entirely different facts by witnesses—facts, too, that are never brought before the tribunal in the particular case at issue.

This brings us to another consideration bearing on the same phase of the problem. Under our worship of private, as distinct from public, rights and our emphasis of private rights rather than public duties, and under an inelastic written Constitution, the courts favor the well-to-do classes and property as embodied in public utilities.

CHANGING OPINION AND PREJUDICE OF TRIBUNE

As the commissioners on procedure said in regard to the public attitude, within a decade or two before the opinion rule was abolished, one who would have proposed it twenty-five years before would have been accounted a fanatic. So a short time ago one who raised the question in this country of the bias of the judges resulting from the unequal distribution of wealth and the division into social classes resting on the inequality, was looked upon as guilty of treason

and as a fanatic. But within the last decade there has been a widespread awakening, not only in the classes of the community having the least wealth, but in the higher financial and social strata also, to the dangers of this inequality and the bias connected with it. For instance, President Frank J. Goodnow, whom nobody would regard as a radical, says¹ that "the members of the United States Supreme Court are often taken from the bench," that, "the judges of the state courts are almost always chosen from the bar and members of the bar usually represent private rather than public interests." He says further,² "the Supreme Court of the United States has on the whole been more liberal in this attitude toward measures of regulation or positive interposition by the states which have deemed it requisite to remedy the evil attendant upon modern industrial development as it is seen in the United States." His conclusion on the bias³ of the courts is "But there is reason to believe that as yet the courts of this country generally, including the supreme court itself, have not been sufficiently convinced of the changing character of political, social and economic conditions and of the necessity of the corresponding flexibility in our law." "For the federal courts may, and often do, ultimately determine for good or for evil the extent of power which we as an organized political community may exercise either in our central or our local organizations."⁴

Even so conservative a writer as Professor Taussig holds like views in regard to the bias and the inaccuracies of testimony of experts in valuation cases.⁵

It is these courts that are forcing upon us the doctrine of fair value and accepting the fancies and hypotheses of interested, incompetent, expert witnesses in regard to the proper methods of determining rates.

With the courts as the final arbiter and really in control of the commissions, with the market for talent cornered by the public utilities, and with the dependence of the expert witnesses on the favor of the companies for future employment and profits, and with the overwhelming numbers of experts now often employed, the courts, juries, and commissions, are likely, under these circumstances, after having received this testimony, to reject all of the teachings of modern science and give the decision to the dead weight of an oath. In other words, these tribunals are very much in the circumstances of the tribunals that tried Drey-

¹ *Social Reform and the Constitution*, p. 331.

² *Ibid.*, p. 329.

³ *Ibid.*, p. 342.

⁴ *Social Reform and the Constitution*. Goodnow, p. 342.

⁵ *Cf. Principles of Economics II*, p. 415. " . . . The time has come for safeguarding the public rights by making it clear just what is the actual investment (not value, G.) in the monopolies of the present and future."

fus in France and Frank in Georgia. In short, they are bowled over by this imposing army of hired retainers. This reduces the whole subject of valuations virtually to a farce. Truly we stand in the face of the danger so emphasized by President Taft; namely, the danger of increasing the popular disrespect for the courts and of developing in the popular mind the feeling that courts, and the law itself, are not to be trusted. When this point is reached, as it has been reached in certain branches of the law in some localities, as for instance in Texas in cases for personal damages alleged to have been caused by public utilities, and in various instances in our history where vigilant committees have acted. When this point is reached, juries no longer make pretense of regarding the law or the evidence, but decide wholly on their prejudices. In such cases the law has broken down, mob violence reigns. It then becomes as easy to get a judgment for personal damages against a corporation for an unjust claim as for a just one, provided only that the case in any way be got to the jury. We seem to be coming to this condition of affairs in public utility valuations under our present false theory of value and method of using expert witnesses, as the *main* source of evidence.

CROSS-EXAMINATION AND JUDICIAL DISCRETION INSUFFICIENT

If the foregoing analysis has any relation to the real facts of the case, it follows that Dean Wigmore's plea that we leave the door wide open for the admission of testimony and trust to exposing error through cross-examination, and the judgment of the jury (or commission) in weighing evidence, fails.

Nor is the lawyers' plea sound (voiced frequently by Dean Wigmore) that the judge, having the right to limit the number of experts, will safeguard the public interests at this point if only he be allowed to retain sufficient discretion. A judiciary that has allowed us to reach our present condition on valuation has already proved itself incapable of dealing satisfactorily with this particular problem.

It is a well known fact that whatever legal discretion the courts and their direct agents, the masters and commissioners may have, they in practice have lost the power to exercise a controlling influence at this point. They merely act as arbitrators between the conflicting attorneys (aided by the experts) to make them obey the rules and allow them to prolong the contest as long as they wish. The Missouri Public Utility Commission is now attempting to limit expert testimony, while the ex-chairman of the California Commission informs me that he actually put a limitation on this evil in certain cases. It remains to be seen whether these feeble

efforts can succeed in changing so ingrained a practice by mere rulings without outside aid.

But some will say we sought light on valuations that we must make under the law, and you have given us nothing but theories—theories that do not help us to do what the law commands. I would have you take the longer view, and look towards, and work for, a reform that will be of ultimate benefit to our civilization. The fact is, that valuation has logically nothing to do with rate regulation. Although the law in this field leaves much to desire, and is sufficiently vague and indefinite, if we take what the United States Supreme Court has actually decided on valuation and not what it has said in its many conflicting and often directly contradictory *dicta*, valuation under existing laws has much less to do with rate regulation than is generally supposed. Nor ought we to hesitate or be discouraged because existing laws or even constitutions, at present, stand in the way of desired social changes. For when necessary and desirable objects cannot be accomplished under existing laws and constitutions, the part of wisdom, and our first duty, is to amend those laws and constitutions.

Nor would I have it inferred from what I have said about the exclusion of opinion testimony and the exclusion for interest that I would have those rules restored as they existed till about the middle of the nineteenth century. Such is not my position. I would rather emphasize the fact that these rules, however unjust and imperfect, rested on an important psychological basis and were aimed at great and appalling evils and that their abolition opened the gate through our recent phenomenal extension of so-called expert testimony in rate cases to an unparalleled development of the very evils these old rules were meant to prevent. Whatever may have been the harshness and injustice wrought by these rules they prevented at least the enormous evils from which we are now suffering in regard to expert testimony. My plea simply is that in getting rid of the old evils we ought not longer to tolerate or look with indifference on such evils as the abolition of these rules permitted if it did not actually cause.

Those who have studied the United States Supreme Court decisions in this field, with the most care and in a disinterested way, are greatly impressed with the fact that this court has wisely refrained from laying down any rules for arriving at the fair value and have thus left the way open for deciding future cases in the light of real needs and with justice to all parties. They further feel that the actual decisions, not the mere *dicta* in the cases, by this court have, on the whole, been eminently just, reasonable, and fair. I freely admit this. But we must not jump at the conclusion that

because of this fact we need have no concern for future justice in this field.

EXPENSE PROHIBITIVE, RECORD UNMAN- AGEABLE

If we bear in mind what I have said about the abuses of expert testimony, the cumbering and lengthening of records, the protracting of trials, and the expense, we can readily see that, speaking practically not technically, justice is actually denied in the vast majority of cases before the cases come to final adjudication by the Supreme Court of the United States. Truly in this field, if ever, justice delayed is justice denied.

It is said that in the Spring Valley Water case the company introduced eleven expert witnesses. In the Des Moines case the company imported sixteen witnesses from the East and compelled the taking of testimony for twelve months. Of these witnesses, the trial court said the lowest priced had \$100 a day and expenses, while one of these witnesses stated under oath, in another case, that his regular price was \$500 a day and expenses. I have it from the best of private authority that the company in this case spent \$150,000 in the trial court alone. It took the city from the time the ordinance was passed December 27, 1910, to June 14, 1914, to get a favorable verdict from the Supreme Court of the United States. What the direct expense of the litigation to the city was it is impossible to say. But when such a burden in time, money and effort, is required from a city of about 75,000 population, think of the effect on this and the hundreds of other smaller cities, in their attitude towards future attempts at regulation. No wonder that Judge McPherson, after sitting through such a travesty of justice in this particular case, was moved to remark in the decision that such a performance was to make the winner of the case the real loser.¹

PRESENT METHODS UNIVERSALLY EVIDENCED

Time fails me to suggest in any detail such improvements as might be made if valuations are to go on. I venture to suggest in broad outline a few general principles. First, I admit that if we are to have valuations, expert testimony is necessary; but all parties, even the

¹"This litigation has cost both the gas company and city extravagantly large sums of money, most of which cannot be taxed as costs, nor recovered back by the party successful in the end. Much of this kind of litigation and practically all of the expense, would be avoided if Iowa, like so many of the others, including some neighboring states, had an impartial and city non-resident Commission, or Tribunal with power to fix these rates at a public hearing, all interested parties present, with the Tribunal soliciting its own engineers, auditors and accountants. Too often we have selfish, partisan, prejudiced, and unreliable experts engaged for weeks at a time, at \$100 a day, or more, and expenses per day, exaggerating their importance and making the successful party the loser." *Des Moines Case*, 199 Fed. 205.

lawyers and judges, declare the present system not only a failure but a farce.²

NECESSARY REFORMS

If experts are not, however, to be entirely excluded, the following reforms are necessary: There must be real experts for the particular question in hand, and not merely self-proclaimed experts. They must be less partisan than at present, and confined more to facts produced by non-experts. In other words they must give their opinion primarily on the facts of the case in hand and not cumber the record with alleged facts and new theories drawn from other facts. They must be greatly limited in number,³ appointed by the court, and paid by the public.

When these, or any other reforms, in this matter are proposed, the lawyer's answer, which he considers absolutely conclusive, is that this is unconstitutional. Sufficient comment has already been made on this point. His next answer is that the public would never stand for such expense. There is a real difficulty here,

²Wigmore, *Evidence*, § 562. C. A. Endlich, *Amer. Law Rev.*, p. 582, "an unmitigated farce." Judge Wm. Bartlett, N. Y. *Amer. Law Rev.*, Jan.-Feb. 1900, p. 4: "super-partisan." *Amer. Law Rev.*, V. 228; "producing the most deplorable confusion and conflict": "hordes of experts levied and enlisted": "worse than useless." Lord Campbell, 10 C. & F. 154: "Hardly any weight is to be given to the evidence of what are called scientific witnesses. They come with a bias in their minds to support the cause in which they are embarked." 21 Howard 88, *Winans vs. N. Y. & Erie R. R.*; "perplexing instead of elucidating the questions involved in the issue."

. opposite opinions of persons professing to be experts may be obtained to any amount." Bouvier, *Law Dict.*, Rawle's 3d Ed.; "is in effect an auxiliary counsel." *Clark vs. State*, 12 Ohio 489; "much assistance cannot be derived from metaphysical speculations" "a farce to regard the weight of evidence always on the side which produced the greatest numbers." *Grigsby vs. Clear Lake Water Co.*, 40 Calif. 405: "advocates of the theory upon which the party calling them relies"; "Should not be much encouraged." "apt to be prejudiced in favor of the party by whom they are engaged." Judge E. Washburn, *Amer. Law Rev.* I, p. 53: "starts with a theory"; "the wish often literally becomes parent to the thought"; "danger of getting theory instead of science, and speculation instead of fact"; "biased by prejudice or warped by interest"; "have rashly dogmatized," "in fraud of justice and in contempt of truth"; "a prize fighter in a ring." *Albany Law Journal*, IX, 122, "If science, for a consideration can be induced to prove anything then science is generally open to the charge of banality and perjury."

Grier, J., in *Winans vs. R. Co.*, 21 Howard 100: "Wasting the time and wearying the patience of both Court and Jury and perplexing instead of elucidating the questions involved in the issue." In testamentary case, Cooley, J., *Frazer vs. Jennison*, 42 Mich. 206: "There must be some limit to the reception of expert evidence" "an army may be had if the court will consent to their examination" "and if legal controversies are to be determined by the preponderance of voices, wealth in all litigation in which expert evidence is important may prevail almost of course." Cited by Wigmore, § 1908. "Mere opinions on the value of property of this kind based on superficial observations are of little value." *Wis. Sup. Ct. Duluth case N. W. R.* 152, 898.

³The Canadian Statute, 1902, C. 9, limits experts to five on a side. The Statute of Ontario allows but two on a side, Judge Cooley in *Frazer vs. Jennison* recommends five on a side at most, stating that two are usually sufficient. English, French and German courts rarely hear more than two or three in all. The witnesses in France and Germany are not witnesses for sides but official witnesses of the court.

but it is not the one alleged. In the first place one chief object of reform is to shorten the trial, abbreviate the record, and lessen the total expense. At present, we allow the utilities to lengthen the trial, and pile up the expense, partly to confuse the issue and overwhelm the tribunal in the particular case, but, also, to frighten off attempts at regulation by making the public authorities afraid of such protracted trials, if any regulation is attempted. In fact, we are in this matter, today, about where we were thirty years ago, in regard to personal damage suits against railroads. It is a well known fact that many railroads fought suits where they knew they could not win,—just as bitterly as where they knew the plaintiff had no chance to win—merely for the sake of frightening off just suits because of the probable cost of litigation. At present, we allow the utilities in valuation cases to go to any expense themselves and to put the public to almost unlimited expense, and then to collect all their costs from the public in the form of rates and charge it all to operating expenses.¹ We then raise the valuations to enable them to recoup their costs while the public has often been forced to pay more directly, in contesting the suits, than the whole case would have cost if it had not been needlessly prolonged.

This method of valuation, then, with its accompani-

¹ The Missouri Commission has recently refused to consider such an expenditure as an operating charge in two different cases. 1 Mo. P. S. C. 5,411,545; 2 Mo. P. S. C. 363.

ment of unlimited experts and false theories of value, gives the companies virtually unlimited funds for defeating the public rights. We may have to apply to such valuations the general theory the law applies to damages for torts; namely, refuse to take any testimony in regard to, or make any allowance for, merely theoretical, uncertain, or speculative elements.² It is the taking of expert opinion on theories, not on facts, that we must guard against.

When the number of experts is reasonably limited and the trials properly shortened, the expense will probably not be greater than the present futile, direct expense to the public treasury is. Certainly it will be much less than the total burden today, when the public must repay the companies in rates for all the unnecessary expenses incurred in defeating regulation.

But with the growing complexity of life, the expense of regulation will always be great. The Utilities Bureau has no more serious duty before it than to teach the public that to control vast aggregations of capital, a large, skilled, expensive and permanent force of real experts is necessary. Pigmies can never control giants.

² Nelson, C. J., in *Lincoln vs. R. Co.*, 23 Wendell 434: "In the nature of the case no set or series of facts exists to which the application of their (the witnesses) peculiar knowledge would naturally lead with anything like mathematical certainty. . . . Even with the jury the damages beyond the actual expenses out, can at best rise but little above conjecture." Does the expert testimony rise above conjecture? Cited by Wigmore, Evidence, § 663.

THE MEANING OF THE CONSTITUTIONAL PROTECTION IN VALUATION

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THE term "valuation" as used in this discussion refers to valuations made by public authority in pursuance of legislative direction. It is only recently that such valuations have been made to any considerable extent, and so far as I know there is no case which directly decides the question considered. An answer to that question must be sought by reference to general principles. The adjudicated cases from which those principles flow are numerous, voluminous and not harmonious. The time does not suffice and no attempt will be made to state or analyze the cases themselves; only a statement of what is understood to be the law will be given.

RATE MAKING A LEGISLATIVE FUNCTION

The first and the most important of these principles is that the function of rate making is legislative. "To prescribe rates which shall be charged in the fu-

ture—that is a legislative act." This language was used by the Supreme Court in a famous case many years ago, and while that court had made decisions before and may have made decisions since which, upon their face, are not altogether consistent with this language, the statement itself has never been modified and is today the law. The legislature may make the rate by direct enactment, as has frequently been done, or it may create a commission and delegate to it the authority. Perhaps I should not use the word "delegate" since in theory the legislature cannot entrust to another its legislative powers. It has been earnestly objected before the courts that the rate making authority of public service commissions was unconstitutional because it involved a delegation of legislative authority, but where the necessity exists even courts will usually find a way, and it is elementary law today that a com-

mission may be "invested" with what is equivalent for all practical purposes to full rate making powers.

The full significance of this fact, that the authority to make a public utility rate for the future is legislative, should be appreciated. Under the federal Constitution and under most, if not all of our state constitutions, the powers of government are divided between different departments and one department cannot exercise the authority of another department. A judge, for example, cannot set aside an act of the legislature simply because he believes it to be an unwise or pernicious law; he must find that the enactment of the statute is for some reason unlawful. If, therefore, the making of a rate is legislative, courts have no power and cannot be invested with the power to review the reasonableness of that rate as a question of fact; that is, the judge cannot modify or alter the rate simply because he believes that it is too high or too low or otherwise wrong. Before he can interfere the unlawfulness of the rate must in some manner appear.

LEGISLATURE CAN REGULATE, NOT DESTROY

The language quoted in the opening sentence was used by the Supreme Court in 1897, but that court had years before in the Granger cases held that the people might regulate the rates of transportation to be charged by our railroads and that this regulation might be accomplished by fixing the rates of transportation. Public feeling against railroads at that time was extremely high and it speedily became apparent that the legislatures would abuse the authority which they had thus acquired. When confronted with this possibility Chief Justice Waite, who had written the opinion holding that the right to regulate by legislative enactment existed, qualified the exercise of that right by the well-known phrase, "This power to regulate is not a power to destroy." While volumes have since been written upon this subject, and while the Supreme Court itself has covered pages in explaining the origin and defining the limits of its power in this respect, it may be doubted whether this simple statement can be improved upon. The legislature may regulate, it may not destroy; and when regulation goes to the point of destruction the courts will interfere. The legislature or its commission may make the rate and the reasonableness of that rate cannot be inquired into by the court, but when the effect

of that rate is to confiscate the property of the utility, the bounds of just regulation are transcended and the utility may appeal to the courts for protection.

TWILIGHT ZONE

Much earnest controversy has been waged over the relative powers of court and commission in the making of the rate. The Supreme Court of the United States has in recent years announced several important decisions in which the principles governing this question are laid down. Today this can, I believe, be affirmed with certainty: there is a line above which the rate is clearly sufficiently high and as to all territory beyond this line the conclusive power of the commission is clear. There is another line below which the rate is clearly too low and any rate in that territory would be unlawful and would be set aside by the courts. Between these two lines is an area within which the vision is not clear. Within these limits honest men may differ. Now whose judgment shall control within this region of uncertainty; shall it be the court or the legislature? Just this was the bone of contention and the courts themselves have finally answered in favor of the legislature. When once it is determined that the rate falls within this region of doubt, the commission is supreme.

The limits of this so-called twilight zone will differ with the utility involved, with the conditions influencing the rate, with the attitude of the public, and with the temper of the court, but that this region of doubt exists and that its limits are broad enough to most profoundly affect the welfare of our public utilities, particularly our carriers by rail, the most important of all, cannot be questioned.

The private property which the public utility uses in the service of the public is entitled to a fair return upon its fair value. To deny this measure of return is to confiscate the property within the meaning of the courts. Two things must be known. First, it must be determined what rate of return shall be allowed upon each dollar of investment, and second, it must be known how many dollars are invested; that is, what is the value upon which a return shall be allowed. I do not mean that the making of a rate is a mathematical problem which can be solved when the rate of return and the value of the property are known, but I do mean

PART XII CONSTITUTIONAL PROTECTION IN VALUATION

THE MEANING OF CONSTITUTIONAL PROTECTION

WHEN FAIR VALUE AS FIXED BY COMMISSIONS IS CONCLUSIVE

THE PRACTICAL SIGNIFICANCE OF CONSTITUTIONAL PROTECTION

WHAT IS THE "PROPERTY" OF A PUBLIC UTILITY

VALUE AFFECTED BY CONTRACT

VALUE AS INTERPRETATION OF CONTRACT

THE PROPERTY THAT IS DEDICATED TO PUBLIC USE

that the allowance of this fair return should be a fundamental inquiry in the rate making and that it is a universal limitation upon the rate-making action of the legislature or commission. It must follow that before the function of rate making can be intelligently discharged, the value of the property to be affected must be known.

HOW FAR VALUATION OF COMMISSION IS CONCLUSIVE

This fact has not always been apparent in the past but it is coming to be recognized more and more. In some way the fair value of the property of our public utilities must be determined. Legislatures in recognition of this fact are investing public commissions with authority to make these valuations. Now when a commission under legislative authority values the property of a public utility for the purpose of using that valuation in its rate making process, it discharges an essential part of the legislative duty which rests upon it. If it were to be held that the courts should fix this value, the legislative department would be largely deprived of its legitimate authority. It has seemed to me, therefore, that it would finally be held that the action of the commission in fixing the value was conclusive within the same limits and to the same extent as is its action in the fixing of the rate. This falls within the principle of that line of decisions which hold that where the determination of a fact is essential to the exercise of an executive or administrative duty, the correctness of that conclusion cannot be questioned by the courts. When the Secretary of War had found that the bridge across the river at Pittsburgh was an obstruction to navigation, it became such obstruction. When the immigration authorities determined that the individual was a Chinaman not entitled to admission into the United States, that question of fact was foreclosed.

The courts will, of course, correct all legal errors which may be made in the process of valuation but, if the above theory is correct, will not review conclusions of fact.

It is not contended that courts can be or should be divested of the right to inquire into the value of the property affected. The question of confiscation is always open. In passing upon that question, the value of the property is a most important consideration which must be inquired into like any other fact. But the purpose of the whole legal proceeding must ever be kept in mind. It is not to determine whether the rate fixed is a reasonable one, but rather, whether it so far passes the limits of just regulation as to destroy the property of the utility. This is the single question and in answering this the rate and the valuation must go together. Confiscation may be affirmed either because

the rate is too low or the valuation too low, but the same rule should be applied to one as to the other.

WHEN SHOULD COURT PASS UPON VALUATION?

In passing it may be interesting to inquire at what time the courts shall pass upon the valuation; shall it be when that valuation is completed or when it is first involved in some judicial proceeding?

It has, I believe, sometimes been provided by the statute directing the valuation that the commission upon the completion of its work should present the result to the court and that the court upon notice to the utility affected and upon due hearing should enter a judgment establishing the valuation, if found to be lawful. A valuation thus established is conclusive upon the parties. The Valuation Act of March 1, 1913, under which the federal commission is proceeding, does not provide for any reference to the court either pending or at the close of the valuation. A tentative result must be served upon the utilities affected and upon certain representatives of the public, and the commission upon hearing may correct its tentative report and establish a final valuation. If this valuation is subsequently presented in any legal proceeding, it is to be *prima facie* evidence but may apparently be collaterally attacked.

The making of the valuation is an essential part of the rate-making duty of the commission. The rate itself cannot be properly established until the correct value is known. Both the public and the utility are therefore immediately interested in the valuation which is established. It has always seemed to me that any question as to the correctness of that valuation raised a controversy between the utility upon the one hand and the public upon the other, which might be made cognizable by the courts. This is not a moot question. If this be so the legislature can undoubtedly provide that the utility shall within a certain time file its objection to the valuation in court to be duly examined and passed upon, or, failing to do so, shall stand foreclosed for the future. Speaking of the federal valuation, it has always seemed to me that it would be highly desirable if in some way reference might be had to the courts as the work progresses, since otherwise the commission may proceed upon some misconception of law which cannot be known until it is too late to be corrected.

Another thought should perhaps be noted. Up to the present time judicial decisions touching matters of valuation have not usually been rendered in respect of valuations made by public authority, but rather upon valuations presented for the first time in some judicial proceeding, usually by the utility itself but sometimes

by the government. The legal presumptions in case of such valuations may be entirely different from what they would be if the valuation had been made by a commission as part of its appointed duty under the direction of the legislature.

PRACTICAL SIGNIFICANCE OF CONSTITUTIONAL PROTECTION

Coming back now to our subject and summing up the whole matter; what is the practical significance of this constitutional protection? How far does it constrain the commission? How far does it protect the utility?

This will depend upon a variety of conditions and considerations. It will depend upon the character of the utility. A gas plant serving a single community, with no competition, whose revenues can be accurately gauged both upon the new and the old rate, and whose operating expenses are exactly known, presents a very simple problem. There is some doubt possible as to the rate of return which should be allowed. There is some question as to the amount of depreciation. The really doubtful part of the whole problem is the valuation itself. Now, it has always been my feeling that, with this sort of a utility, the limits of the twilight zone would be extremely narrow, and that, even in the valuation itself, the court would not be inclined to allow great latitude of judgment. The questions of fact which enter into that valuation are so comparatively easy of determination that all reasonable men must have substantially the same opinion.

Compare with this the question presented in the fixing of railroad rates of transportation. Here are all kinds of competition, between carriers, between places, between commodities. The rate under which one carrier can live will put its competitor out of business. There is no immediate connection between the value of a particular property and the rate to be applied to that property. The whole subject is involved in doubt and is peculiarly a matter of judgment about which the opinion of the commissioner with years of experience, who has come to have a sort of rate making sense, so to speak, is of value. In such a case the limits of this zone of doubt must of necessity be much wider. The valuation itself will be scrutinized much less closely. While the legal rule may be the same, the application of that rule will be altogether different.

Much will depend upon the disposition manifested by the commission itself in the making of the valuation. If it be evident that that body has acted with an open mind, has honestly endeavored to do entire justice in the premises, is ready to correct error against the utility when its mistake appears, the court will accord to its work a much different treatment than as though the

contrary appeared. This is well illustrated by a recent case in the Supreme Court of the United States which is often referred to.

The Cedar Rapids Gas Company had been required by ordinance to charge a certain rate for gas and had applied to the state court for an injunction restraining the enforcement of this ordinance. The case finally reached the Supreme Court of the state, which after a careful and elaborate consideration of the matter dismissed the petition, stating, however, that the company might, after an actual trial, again apply to the court if the results of experience justified it. From this decision of the state court a writ of error was taken by the company to the Supreme Court of the United States. That court dismissed the suit. The opinion has been referred to as deciding several things. To my mind it decides nothing. The court simply says that the attitude of the state court toward the plaintiff in error is a perfectly fair one and that, this being so, it will require a perfectly clear case to induce the Supreme Court to interfere. This is the paramount lesson of the Cedar Rapids case.

Much will depend upon the temper of the court. In the popular apprehension the judge simply declares the law uninfluenced by popular clamor or by personal feeling. And this in the main is correct. The judge will apply a statute even though he believes it to be pernicious. He will follow a decision although to his mind that decision is utterly wrong; but here there is neither statute to apply nor decision to follow. Every case is a law unto itself. Does this act of the commission transcend the bounds of just regulation? Does it confiscate the property of the utility? This is a question of opinion, of judgment, of discretion, and the answer will be profoundly affected by the attitude of the public and the mental habit of the judge himself. In the twenty years during which I have had to do with this general subject there has been a wonderful transformation in the disposition of the courts toward this class of cases.

IMPORTANCE OF PUBLIC SERVICE COMMISSION

The constitutional protection as applied to valuation means this: Errors of law will be corrected. The courts will restrain arbitrary and unwarranted action. They will not and can not protect against errors of judgment. They cannot secure to the utility reasonable rates. There are wide limits within which the legislature and legislative commission are supreme.

If this be true the public service commissions of this land largely control the welfare of our public utilities. This should be clearly understood. No public official today discharges a duty of greater delicacy than does

the public service commissioner. Upon the one hand, he is the advocate and guardian of the public interest, which usually has in the questions coming before him no other supporter, while at the same time he must stand as a judge between the patron of the utility and the utility itself. It is of equal importance to the util-

ity and the public that only men of the highest type should be selected for these positions, and that, when once selected, they should be assisted and supported in the discharge of their duties. Upon the quality of these commissioners the ultimate success of public regulation depends.

CONSTITUTIONAL PROTECTION IN VALUATION

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THE mathematical process of multiplication consists of applying a multiplier to a multiplicand. The resulting product is affected equally by the value of each factor.

The legal process of valuing public utility property to determine whether a given rate or service regulation conflicts with the 14th Amendment is similar to multiplication. A multiplier, value, is applied to a multiplicand, property. The product is the ultimate value, which, under the rulings of the Supreme Court, is protected by the Constitution.

The science of mathematics has evolved a distinctive terminology, the use of which is free from confusion and obscurity. The science of law has not been so fortunate. For in the legal process, the same term, "value," is applied alike to the multiplier and to the product. The factor, however, is none the less distinct from the product, which it reaches only by combination with property.

In multiplication, if the first factor be halved and the second doubled, the product remains the same. In valuation, if elements of value are deducted from one factor and corresponding elements of property are added to the other, the resulting ultimate value will be unchanged. But if in valuing a public utility plant all elements, whether of value or of property, are weighed with reference solely to the one factor or the other alone, some may be excluded which belong in the product while others may be included which do not.

DECIDED CASES ARE PRECEDENTS

In valuations, the product has a great and far-reaching influence. Ultimate value is a measure of taxing power and a limitation of vested property rights. Each has great social and economic consequences. In the effort to reach a result commendable from the standpoint of equity and good conscience, an entirely proper addition or deduction may be made in the wrong factor. This would not be a serious matter if a solved problem exercised no influence on succeeding

problems presented for solution. Such is not the case in applying the 14th Amendment to valuations for rate making.

It is proposed in this paper to examine the nature of the property which is protected by the 14th Amendment. The title of the paper is Constitutional Protection in Valuation. Only in a figurative sense is the title correct, however. The paper deals with the measuring of property rights rather than with the manner or method of valuing ascertained property rights. Consider that the problem of the Supreme Court in these 14th Amendment cases is represented by the formula:

$$X = P^v$$

X will be the fair, present value sought to be determined, P will be the property of the utility and the exponent, v , the rule of value. I ask you for the next few minutes to eliminate from your consideration both X and v and to concentrate your attention on P alone.

WHAT IS "PROPERTY" OF PUBLIC UTILITY?

What is the "property" of a "person" engaged in a public calling? Is the quality of such property affected by the person being a corporation? Does voluntary assumption of the obligation to serve the public at reasonable rates limit in law the rights of ownership that may be acquired in things both tangible and intangible? A distinction between "value for rate making purposes" and value for certain other purposes is found to exist in the case of some species of property. Does this point to the existence of an element limiting or qualifying property rights in things dedicated to public use? Are the facts material and relevant to the trial of an issue of "value" under the 14th Amendment, the same facts that would be material and relevant to the trial of an issue of "property" under the same provision of the Constitution?

These questions are suggested by the scope and tendency of the lay discussion of the valuation question, and by results reached in cases decided by the

Supreme Court. The nature and ramifications of the lay discussions are illustrated by the proceedings of this Valuation Conference. Here are found "reproduction value" contrasted with "fair value"; "actual cost" on the one hand and "original cost" on the other, considered as a basis for "fair value"; "depreciation" treated as a factor in "fair value"; and "going value" dealt with as an element of "fair value." In general, there is a distinct line of cleavage between the proponents of a "reproduction value" theory and of a "historical" theory of value, the former of which seems based on a conception of absolute value applied to exclusive property rights and the latter, on relative or qualified values. "Value" is said by some to be determined by the status of the corporation, which is regarded on the one hand as an independent, self-possessed individual, and on the other hand, literally as the agent of the state.

INCONSISTENCIES IN COURT DECISIONS

The results reached by the Supreme Court present seeming inconsistencies. Apparently in a search for value, the court, in *Omaha vs. Omaha Water Co.*, 218 U. S. 180, approved a separate allowance and appraisal of going value. This was a purchase case. The city of Omaha was required to complete the purchase of the company's plant at a price that included this allowance. In *Des Moines Gas Co. vs. Des Moines*, 238 U. S. 153, the court approved a valuation in which the appraiser "considered" going value only to the extent of valuing the physical properties at their full reproduction cost, less depreciation. The appraiser found specifically, however, that a seller would require, and a buyer would pay, \$300,000 for the going value. This was a rate case. The court said:

"That there is an element of value in an assembled and established plant, doing business and earning money, over one not thus advanced, is self-evident. This element of value is a property right, and should be considered in determining the value of the property, upon which the owner has a right to make a fair return when the same is privately owned although dedicated to public use."

In the last named case the court approved a disallowance of the value, on the reproduction cost theory of value, attached to the mains of a gas company by reason of the laying of pavements above the mains subsequently to their installation. If "value" is the objective of the court's inquiry, how is it possible to escape the conclusion that what is owned by the company is more valuable after than before the streets are paved? At least, a seller of the entire property would be justified in demanding more by reason of this change in the circumstances of the property, and a buyer

would be disposed to pay more. Is this element of value any less a property right than going value?

"NO PROPERTY" IN GOOD WILL

Closely resembling certain elements of going value is good will. The Consolidated Gas case (*Willcox vs. Consolidated Gas Co.*, 212 U. S. 19) is authority for the rule that good will does not exist in the gas business, nor, inferentially, in other public service businesses. How closely this rule corresponds with the fact, however, is a matter of some doubt. Few of the utilities are entirely free from the influence of competing agencies of some sort, even though not of the same kind. The jitney bus recently blossomed into a formidable competitor of the street railway in the local transportation field. The steam railroads are openly competitive as between themselves in more ways than one. Gas and electricity are competing agencies for many kinds of lighting, heating and power services. But whatever may be the practical experience as to the likelihood of customers of these utilities continuing to resort to the old stand, the holding is generally accepted as sound that no property right of good will is acquired by a public utility enterprise, which right may be asserted under the 14th Amendment to stay the hand of public rate or service regulation. The rule here is not that no value attaches to an acknowledged property right, but that the property itself does not exist. But this does not mean that, as between a public utility and a party other than the state, no property right of good will exists.

The valuation of franchises requires only brief mention in passing. He is indeed credulous who cherishes a hope that the Supreme Court will ever find "value for rate making" in special franchises. Yet franchises are property. They are capable of exclusive possession and use, and they may be disposed of freely, subject only to the conditions contained in the franchises themselves. Is the refusal of the court to require the separate appraisal of the value of such franchises in rate making anything more or less than an adjudication that the property right of enjoyment in franchises is a limited one as between the corporation and the state?

PROPERTY; RIGHT OR WRONG?

The doctrine was laid down in the Knoxville water case (*Knoxville vs. Knoxville Water Co.*, 212 U. S. 1), and later specifically applied in the Minnesota Rate case (*Simpson vs. Shepard*, 230 U. S. 352), that physical properties must be valued in their actual, depreciated condition. In the latter case it was held that land for rights of way and terminals may not be taken at their values for railroad purposes but at their fair, market values. Each of these holdings does some violence to

the repeated declaration of the court that the object of the inquiry is to ascertain fair, present value. Only in a limited sense is fair, present value affected by use or depreciation. Railroad property cannot well be conceived of as having anything other than a value for railroad purposes. Here again, the rulings of the court are suggestive of an adjudication of the property right of enjoyment in the plant and equipment, or land, owned, rather than of the value of the exclusive rights of the owner in such properties.

The 14th Amendment does not mention value. It extends the protection of the Constitution to property. The provisions of the amendment in point are as follows:

"Nor shall any state deprive any person of life, liberty or property without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws."

Blackstone says of property: "The third absolute right, inherent in every Englishman, is that of property: which consists in the free use, enjoyment, and disposal of all his acquisitions, without any control or diminution, save only by the laws of the land." 1 Bl. Comm. 138.

Property denotes rights, in its primary meaning. It is in its secondary sense that it denotes things.

"In its proper use, the term 'property' applies only to the rights of the owner in the thing possessed. The term, however, often means the thing possessed, as well as the estate or interest which the party possessing it may have in it." 23 Am. and Eng. Ency. of Law, 2d Ed., 261.

VALUE IMPLIED EXCLUSIVENESS

The law also recognizes limited properties in chattels. Of such a nature is the property of a bailee. And property in things material, even including land, may be limited by contract, gift, or devise or bequest.

Of value, definitions are manifold. All definitions, however, seem to describe attributes of property. Whether value has its origin in the relation between supply and demand, in the labor expended in the production of a thing, or in the cost of reproduction of the thing, is relatively immaterial. Value, in an economic and a legal sense, seems incapable of existing independently of an exclusive right of some kind. The ultimate worth of a right may depend on the quality of the right; but the quality is not affected by the value attached to the right. In searching for value, or ultimate worth, one's judgment may be influenced as well by some limitation of the right itself as by any of the elements by which value is ordinarily determined; either influence will be discerned in the result and unless one distinguishes closely, that may be taken for an effect which in reality is a cause.

Thus, diminution or aggrandizement of right may affect the ultimate worth fully as much as inclusion or exclusion of elements of value.

RIGHT OF DISPOSAL LIMITED

Rights of property in things devoted to public use are limited in at least two different respects. First, is enjoyment, which is said to be limited to a fair return on value. Second, is disposal, which seems limited by the obligation to serve the public. Is there an analogy between the two limitations which throws any light on value?

Public service corporations labor under a disability to dispose of their property without the sanction and approval of the state. The leading case in which this disability is set forth is *Central Transportation Co. vs. Pullman's Palace Car Co.*, 139 U. S. 24. This was an action to recover the stipulated rental due under a lease of all the personal property of the plaintiff to the defendant. The defense was interposed that the making of the lease was beyond the power of the plaintiff. The plaintiff was incorporated, among other things, for the purpose of "the transportation of passengers, in railroad cars constructed and to be owned by the said company in accordance with the several letters patent." In the absence of express legislative authority for the company to make the lease, the court found the lease to be absolutely void, "because it involved an abandonment by the plaintiff of its duty to the public." The court based its decision squarely on the public duties assumed by the company. It said:

"The plaintiff, therefore, was not an ordinary manufacturing corporation, such as might, like a partnership or an individual engaged in manufactures, sell or lease all its property to another corporation. . . . But the purpose of its incorporation, as defined in its charter, and recognized and confirmed by the legislature, being the transportation of passengers, the plaintiff exercised a public employment, and was charged with the duty of accommodating the public in the line of that employment, exactly corresponding to the duty which a railroad corporation or a steamboat company, as a carrier of passengers, owes to the public independently of possessing any right of eminent domain. . . . The plaintiff was not a strictly private, but a quasi public, corporation; and it must be so treated as regards the validity of any attempt on its part to absolve itself from the performance of those duties to the public, the performance of which by the corporation itself was the remuneration that it was required by law to make to the public in return for the grant of its franchise."

STATE LAWS PREVENT FREE DISPOSAL

In pursuance, apparently, of the line of authorities represented by this case, the legislatures of a number

of states have enacted that public utilities shall not dispose of any part of their property used for the convenience of the public without first securing the approval of a public service commission. For instance, the Illinois public utility law provides (Section 27):

"Unless the consent and approval of the Commission is first obtained: (c) no public utility may assign, transfer, lease, mortgage, sell, or otherwise dispose of or encumber the whole or any part of its franchises, licenses, permits, plant, equipment, business, or other property; but this shall not be construed to prevent the sale, lease, assignment or transfer by any public utility of any tangible personal property which is not necessary or useful in the performance of its duties to the public."

This limitation, furthermore, is made to apply to natural persons engaged in a public utility business as well as to corporations. It would seem to apply to a natural person owning an automobile and operating it as a jitney.

Does such a statute operate to deprive the owner of his property without due process of law? The right freely to dispose of one's property is one of the rights described by Blackstone as being inherent in every Englishman. Such rights are, of course, subject to the law of the land. In the foregoing case of the carrier of passengers, however, the right to dispose of all the personal property never existed. The lease was absolutely void. Power in the corporation to make the lease was entirely wanting. That was not a case of the state, under the police power, placing a subsequent limitation on the use of property. It was a case of a corporation, which because it was a common carrier never came into possession of rights of property such as another owner, not engaged in a public calling, has in the things possessed by him. And does it go too far to say that the natural person owning the jitney bus voluntarily surrendered the right of free disposal in his automobile when he dedicated that instrument of common carriage to public use?

And if the acceptance of a charter to engage in a public employment operates to prevent a corporation from acquiring a property right of free disposal in that which it subjects to public use, does the very same act operate to prevent the same corporation from acquiring a complete property right of enjoyment in the things it comes to possess for the convenience of the public, even though it is unable as a result to assert as against the state a value under the 14th Amendment which clearly would attach to its plant, equipment and business were it engaged in a private calling?

If the owner of property dedicated to the use of the public surrenders in the act of dedication his right freely to dispose of his property, does he also surrender

his right to set up the fair value of his property as a barrier under the 14th Amendment to legislative rate making, when such right is predicated solely on his title, ownership or possession? The act of dedication creates an obligation to serve; it also creates an obligation to make reasonable charges, whether with or without public supervision. If the rights of ownership are limited in the one case are they limited equally in the other? Does the act of dedication amount to a waiver of the right of exclusive enjoyment and substitute in its place for the protection of the owner of the property a contract right?

The distinction in law between public employment and private employment is now clearly defined and generally well recognized. Wyman (Public Service Corporations, Sect. 38) has illustrated the distinction by his characterization of the duties imposed on each, respectively, by law. Thus, duties imposed on persons engaged in private undertakings are negative and merely restrictive; those imposed on public undertakings are affirmative and coercive. To the latter, the law says, "You must"; to the former, it says, "You must not." Furthermore, this distinction is not a creation of statute; it has its origin in the common law and is centuries old.

PUBLIC CALLINGS DISTINGUISHED

The distinction is well illustrated by an extract from a recent decision of a United States Circuit Court of Appeals which appeared in an editorial in the *Philadelphia Inquirer* of this date. The decision was that the manufacturer of a branded breakfast food might lawfully decline to sell his product to a retailer who refused to maintain prices. The extract is as follows:

"We have not reached the stage where the selection of a trader's customers is made for him by the government. . . . We had supposed that it was elementary law that a trader could buy from whom he pleased and sell to whom he pleased and that his selection of seller and buyer was wholly his own concern. It is part of a man's civil rights that he is at liberty to refuse business relations with any person whomsoever, whether the refusal rests upon reason or is the result of whim, caprice, prejudice or malice."

"This, however, will be sad news to those people who imagine that the government ought to do everything, especially those things which inhere to their own benefit."

A man or corporation engaged in a public utility business, however, has no right of selecting his customers. On the contrary, he is compelled by his profession to make the entire public his customers.

In the eyes of the law the duties of a public calling are voluntarily assumed. Without a profession to serve the public the extraordinary duties of a public

employment do not and can not attach to a person. With respect to corporations whose charters are silent as to the imposition of the duties of public employment, the courts have held that "by accepting the act of incorporation they undertake to do all the public duties required." *Lumbard vs. Stearns*, 4 Cush. 61.

"It is now well-accepted doctrine that the very acceptance of a charter providing for the carrying on of a business public in character is a sufficient profession in the particular case." *Wyman, Pub. Ser. Corp.*, Sect. 212.

We have already observed in an earlier quotation how the assumption of public duties is regarded as consideration for the grant of a charter to a public service corporation.

"PERSON" INCLUDES CORPORATIONS

The protection of the 14th Amendment is extended equally to every "person." Public service corporations are held to come within the meaning of "person." In *Smythe vs. Ames*, 169 U. S. 468, the court said: "That corporations are persons within the meaning of this amendment is now settled." Three earlier decisions were cited as authorities. The first of these was decided in the lower court on the ground that the act of the state legislature violated the provisions of the 14th Amendment. The Supreme Court, however, found another ground for deciding the appeal, and this particular question of constitutional law was not passed on, although the court said the importance of the question could not be overestimated. *Santa Clara County vs. Southern Pac. R. Co.*, 118 U. S. 394. Furthermore, this was a tax case.

The second authority cited was *C. C. & A. R. vs. Gibbs*, 142 U. S. 386. Here the court examined the legality of a state law which taxed railroads to defray the cost of a railroad commission. With absolutely no discussion the court said here: "Private corporations are persons within the meaning of this amendment; it has been so held in several cases by this court." Of the authorities cited, the first was the Santa Clara case, already referred to. The second involved the legality of a license fee imposed on all foreign corporations by the state of Pennsylvania. *Pembina, etc. Co. vs. Pennsylvania*, 125 U. S. 181. The third and last involved the legality of a statute assessing double damages on railroads for live stock injured or killed for want of fences along rights of way. *M. & St. L. R. Co. vs. Beckwith*, 118 U. S. 394.

The third case cited in the opinion in *Smythe vs. Ames* was *Gulf, etc., R. Co. vs. Ellis*, 165 U. S. 150. This involved the legality of a statute allowing the collection of an attorney's fee by a successful plaintiff in certain actions against railroads. The cases heretofore described were referred to as authorities for the

proposition that corporations are persons. In addition were cited *M. & St. L. R. Co. vs. Herrick*, 127 U. S. 210, which involved a statute abrogating the fellow-servant doctrine, and *Covington & Lexington T. R. Co. vs. Sandford*, 164 U. S. 578, a case of state rate making in which the application of the 14th Amendment to quasi-public corporations, as opposed to merely private corporations, was not referred to.

CONSIDERATION BY SUPREME COURT

Thus the Supreme Court seems not to have considered whether the application of the 14th Amendment to public service corporations involves any unusual features growing out of the voluntary profession of the "persons" there invoking protection to serve the public at reasonable rates, as well as out of the implied contract so to do embodied in the granting and acceptance of the corporate charter. Nor does the court seem to have been called on to consider directly whether the property right of enjoyment of a public service corporation is limited either by its voluntary profession or by its contract with the state.

In *Western Advanced Rate Case*, 1911, the Interstate Commerce Commission said (20 I. C. C. R. 307):

"Notwithstanding these decisions, it remains for the Supreme Court yet to decide that a public agency, such as a railroad created by public authority, vested with government authority, may continuously increase its rates in proportion to the increase in its value, either (1) because of betterments which it has made out of income, or (2) because of the growth of the property in value due to the increase in value of the land which the company owns."

The Haverhill Gas Light Co., with an authorized capital stock of \$75,000 in 1871, on which average dividends of 8 per cent per annum were paid, had accumulated in 1900 a surplus invested in its plant and equipment estimated to represent from \$275,000 to \$300,000. Speaking of this surplus the Massachusetts Board of Gas and Electric Light Commissioners said (16 Annual Report 9):

"Such a surplus is by every principle of law the property of the corporation. It has an undoubted legal right to distribute it as a dividend as it is acquired, or *pro rata* to its shareholders in case of liquidation; but, notwithstanding this, the circumstances attending its accumulation impose upon the company, so long as it continues to exercise the functions of a public monopoly, the duty to employ it for the joint advantage of the consumers and the corporation. It need not be dealt with as the exclusive property of either."

INVESTMENT NO MEASURE OF VALUE

How do the views expressed in the foregoing quotations square with the fair, present value rule? Is there any certainty that the Supreme Court would

decline to sustain results obtained under the strict application of these views? But investment is not indicative of value. If it enters the equation at all under the Constitution it would seem to be as a measure of subsisting property rights of enjoyment. Neither commission would question the right of the companies to possess and use properties acquired from surplus, or properties, such as land, which have increased in value as a result of general community growth. But the companies are not at liberty, without legislative approval, to dispose of such properties, thereby realizing for the benefit of their stockholders the values existing therein. Are they at liberty to assert such values in a proceeding under the 14th Amendment to defeat rates which will permit a reasonable return to be earned on property rights measured by investment alone?

The rule by which the Massachusetts Public Service Commission proposes to be guided in fixing reasonable rates is thus stated in a recent case (*In re Blue Hill Street R. Co.*, P. U. R. 1915 E, 396):

"The ruling of the Commission in the Middlesex & Boston Rate Case, it may be said, amounts simply to a determination that in this commonwealth, at least, 'fair value' may justly be measured by the amount of 'capital honestly and prudently invested,' rather than by the cost of reproducing the property."

And the Commission quote with approval the following extract from the Buffalo Gas Case, 3 P. S. C. R. (2d. Dist. N. Y.) 353, 644:

"The foregoing considerations point with almost irresistible force to the conclusion that what is called the fixing of the value of the property in the public service for the purpose of rate making is not a fixing of value in any proper sense of that word as it is correctly used in our language. It is a determination of what, under all the facts and circumstances of the case, is a just and equitable amount upon which the return allowed to the corporation is to be computed."

LITERAL OR FIGURATIVE MEANING?

The rule announced by the Massachusetts Commission does violence to the fair, present value rule. Would the Supreme Court, however, set aside a schedule of rates fixed by the Commission and predicated on capital honestly and prudently invested, even though the fair, present value of the property largely exceeded the amount of such investment? Justice Hughes in summarizing the law in the Minnesota Rate Case said:

"In determining whether the right has been denied, each case must rest upon its special facts. But the general principles which are applicable in a case of this character have been set forth in the decisions.

"(1) The basis of the calculation is the 'fair value of the property' used for the convenience of the public. . . .

"(2) The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment, having its basis in a proper consideration of all relevant facts."

And the learned justice proceeded to quote the well known rule of *Smythe vs. Ames* in which the inquiry into value is described.

Is the Supreme Court using the term "value" in a literal sense? Or is the word used figuratively to describe the measurement of rights of property as affected by the profession of public employment or by the contract with the state?

In the second franchise value decision of the New Jersey Court of Errors and Appeals (*Public Service Gas Co. vs. Board of Public Utility Commissioners*, 94 Atl. 634), the contention was made that the special franchises of the company had a value for rate making measured by the difference between the appraised value of the physical properties and the market value of outstanding stocks and bonds. The court inquired into the source of the value alleged thus to exist. It conceded that the franchises were property. But it held that their value had its origin and source in unreasonably high rates which the state had suffered the company to charge in the past. Therefore, the franchises could not properly be valued in determining the reasonableness of rates to be charged in the future. The court seems to have based its judgment squarely on the charter obligation of the company to charge reasonable rates at all times, regardless of the exercise by the state of its regulating powers.

VALUE AFFECTED BY ORIGIN

This is a case which under other circumstances would deserve more extended discussion and analysis. Suffice it now to say that it affords the somewhat novel principle that the present value of property may be disregarded if the circumstances under which that value came to attach to the property indicate a violation in the past of the company's charter obligation to charge only reasonable rates. This, however, amounts to an out and out adjudication of the exclusiveness of the company's property rights of enjoyment when the state is involved. Is this doctrine so hostile to the rule of fair, present value as to forecast its upsetting when it is presented to the Supreme Court for review?

The Supreme Court has given a clear-cut intimation that it sees a connection between the charter contract, or profession of public employment, of the public service corporation and valuations under the 14th Amendment. In the Cedar Rapids Gas Case, 223 U. S. 655, the court was considering the failure of the

regulating body to make a specific allowance for going value. It said:

"An adjustment of this sort under a power to regulate rates has to steer between Scylla and Charybdis. On the one side, if the franchise is taken to mean that the most profitable return that could be got, free from competition, is protected by the 14th Amendment, then the power to regulate is null. On the other hand, if the power to regulate withdraws the protection of the Amendment altogether, then the property is nought. This is not a matter of economic theory, but of fair interpretation of a bargain. Neither extreme can have been meant. A midway between them must be meant."

VALUE AFFECTED BY CONTRACT

Is this a departure from the fair, present value rule? Does it suggest placing the adjustment under the 14th Amendment on a different basis from value alone? Certainly a prior bargain can not affect present value in any proper sense. Its result might be, however, to affect the property rights that are capable of assertion under the law against one party to the bargain by the other party.

In the Minnesota Rate Case the Supreme Court had before it the contention that the value of the property was affected by the source from which the property was derived. This contention it declined to consider, saying:

"Finding this defect in the proof, it is not necessary to consider the objections which relate to the sources from which the property was derived or its mode of acquisition . . . ; and we express no opinion on the merits of these contentions."

But may value in any proper sense be measured by the sources from which the property was derived or its mode of acquisition? Nevertheless, the court expresses no indisposition in a proper case to consider these objections on their merits. Is this an indication that the court is coming to view "value" as typifying the exclusiveness of the property rights of enjoyment acquired under a profession of public service and a contract with the state to charge only reasonable rates, whether the regulating power of the state is exercised or not?

It is only within comparatively recent years that the effort has been made to fix individual rates on the basis of the cost of the service. Prior to this time rate reasonableness seemed to signify accommodation of the price to the value of the service to the consumer. *Canada So. R. R. Co. vs. International Bridge Co.*, L. R. 8 App. Cas. 723. In the field of the municipal utilities, in particular, value of service is no longer regarded as a dependable criterion of rate reasonableness. With the development of conditions which

required the abandonment of the value of the service as a measure of rate reasonableness, has there arisen a condition that precludes dependence on value as an attribute of exclusive property rights to measure the responsibility of the state under the 14th Amendment?

SCOPE OF EVIDENCE ENLARGED

If the issue under the 14th Amendment becomes the exclusiveness of the property rights of enjoyment of a public service corporation when the state is involved, the door apparently will be opened to the introduction of a considerable range of evidence, which under a strict theory of value would necessarily be excluded. It would seem that the corporate and investment history of the company straightway would become material and relevant to the principal issue. There would seem to be occasion to show in detail the circumstances under which each step in the development of the property was undertaken, so far as this might be possible with the records that are available. A demand would seem likely to exist for a practicable means of measuring the risks of an enterprise during the successive stages of its development, as these risks have been evaluated by the markets from which the financial resources have been drawn.

The 14th Amendment creates no property rights. It simply prevents invasion by the state of property rights which are vested under general law. There is no property right in things dedicated to public use which is entirely exclusive. Rate and service regulations necessarily imply some limitation of the right of free enjoyment. The very question under the 14th Amendment would seem to be the extent of that limitation. The value of the rights as so found to be limited is a matter for subsequent determination. The limitation is voluntarily assumed by the corporation, being a matter of contract.

The 14th Amendment applies only to invasions of property rights by the state. But the state is one of the contracting parties. How can it be said that the state is invading a property right if it is merely asserting that which is secured to it by contract? The contract defines the quality of the property rights. In advance of a delimitation of the property rights it is futile to attempt to value them in any ordinary sense. If the ascertainment of value is in reality the delimitation of property rights, then the only essential issue is the meaning of the contract.

VALUES AS INTERPRETATION OF CONTRACT

We have regarded value as an external attribute of property rights. If value be regarded as something inherent in the very conception of property, its existence in rate making is measured entirely by the exclusiveness

of the right of enjoyment. Then the value of property in a constitutional sense in rate making must depend on the contractual right of the corporation to exclude the state from interfering with earnings. In either view of value, it cannot be measured without a prior determination of the bounds of exclusiveness of the owner's rights of enjoyment as against the state.

The question of value, then, seems to come to one of the interpretation of a contract. Broadly speaking,

value may be taken as an expression of the intention of the parties to a contract, as such intention is derived from the contract itself and the subsequent conduct of the parties. This view of value is not far removed from the results reached by the Supreme Court to date. It is one that will go a great ways to harmonize on a common ground of principle, if not of fact, the several interests touching rate making under legislative authority.

DISCUSSION OF CONSTITUTIONAL PROTECTION IN VALUATION

BY NEWTON D. BAKER

Mayor of Cleveland

The Fourteenth Amendment to the Constitution provides "nor shall any state deprive any person of life, liberty or property without due process of law."

This prohibition upon the action of the states is enforceable by the courts, and the Supreme Court of the United States is the guardian of whatever protection is here guaranteed. Its terms are simple and comprehensive. No state can deprive any citizen of property. It is not necessary in this connection to discuss the due process limitation, nor is it necessary to refer to the similar provisions of state constitutions, for to the extent that they are less sweeping than this guarantee, they are supplemented by it.

In the application of this provision to the property of public utility companies we have several difficulties to contend with. Obviously the inquiry in each case is: What is the extent of the property? And this inquiry is complicated since, first, the mere devotion of property to a public use is a dedication to the public of some part of the proprietary right; second, the police powers of the state cannot be abridged by contract; and third, the property of utilities is operated under a vast variety of state laws and ordinances, some of them creating quite explicit contracts, and some of them so indefinite on the contractual side that rather violent implications are necessary to develop any contractual relation at all. It is doubtless this variety of relationships which led Mr. Justice Hughes to say, in the Minnesota Rate case quoted by Mr. Kern, that

"in determining whether the right has been denied, each case must rest upon its special facts."

THE PARENT DECISION

In 1876 the Supreme Court of the United States, in *Munn vs. Illinois*, laid down the doctrine that

"when the owner of property devotes it to a use in which the public has an interest, he in effect grants to the public an interest in such use and must, to the extent of that interest, submit to be controlled by the public for the common good as long as he maintains the use."

This doctrine, concurred in by Chief Justice Waite, Justices Clifford, Miller, Bradley, Swain, Davis and Hunt, was

vigorously dissented from by Mr. Justice Field and Mr. Justice Strong, the point of their dissent being that any implied dedication to the public of an interest in private property by such devotion of the property to a public use, was merely a roundabout way of defeating the operation of the protection guaranteed by the Fourteenth Amendment. But from the date of the decision of that case until now, the doctrine has stood and has been repeatedly affirmed. The implications of the doctrine have constantly widened and as rate regulation has grown in the country, this starting point has developed greater importance. Of course, it still leaves undetermined the extent of the interest dedicated to the public and that must be determined first, in order to separate it from the property still remaining in the company which is the property to be valued.

WHAT IS DEDICATION TO THE PUBLIC

Perhaps the doctrine underlying this separation could be stated as follows: the devotion of certain property to the public service in a public utility enterprise admits the public to such an interest in the property as will enable the public to exercise the control necessary to prevent conditions more adverse to the public interest in the operation of the property than could be secured were the public free to contract with others. In this we have a rule, both for a separation of the property remaining in the owners from that donated to the public and for a valuation, which will be difficult to follow only because of the variant conditions in individual cases. That rule would be that when a company engages in a public utility service it retains the right to operate its property only upon the basis of valuation and in the mode of operation which it could do in a fair competitive field, and as a consequence it donates to the public whatever rights or value inhere in the fact that either its franchise or the public convenience exclude actual competition.

Under such a rule as this many rights and investments do not cease to be property, but they must cease to be the property of the owning company or individual by being a part of the donation to the public. As a matter of fact some such theory as this will ultimately have to prevail and prevent recourse by the public to municipal ownership as a

relief from the inclusion of elements into valuation for rate making purposes upon which the public are unwilling to pay. We must never forget that our theoretical and legal logic-chopping about propositions of this kind will be corrected for us by a stern application of the practical facts as they occur in the world. The utility experts may spin as fine theories as they choose, but when the price gets too high the public will decline to pay just as they did in the Knoxville Water case, where, having granted an exclusive franchise, or at least bound the city of Knoxville to make no grant in conflict, the city itself undertook to perform the service and its detour was sustained.

The difficulties that arise, in determining the *property* of a company, from the character of contracts made under particular state laws and city ordinances, are of course just what Mr. Prouty calls it: more an interpretation of a contract than a determination of a value. If a city has granted to a street railroad company the right to build and operate a street railroad under definite terms and conditions and to charge a stipulated rate of fare for a definite period of years, that contract cannot be impaired by the action of the state, and any attempt at regulation of the rate is obviously inhibited by another provision of the Federal Constitution. But street railroad contracts and other public utility contracts thus definite in their terms do not come into courts on regulation questions. It is where the term is *indefinite* or the rate required to be *reasonable*, or some other elastic provision exists in the contract, that the courts are called upon. We therefore have two kinds of questions: first, the settlement of the meaning of the contract, when that is done the respective and relative rights of the public and the owners are determined; and second, the valuation question then arises upon the rights thus apportioned to the owners as against the public.

METHODS OF VALUATION

I shall not here enter upon the various theories of valuation. Each of them is beset by difficulty, because the thing to be valued cannot have a market price. Of course the securities of a utility company can be sold in the market, but the value attached in the market to those securities attaches to the property of the public and of the corporation alike. One element in that market valuation is undoubtedly the nuisance value of the property or the inconvenience to which the public would be subjected in any attempt to restrict the corporation to a return upon its own rights properly segregated and valued. The market price also includes something, for the fact that the action of the public in the assertion of its rights is spasmodic, and particular spasms of assertion are discounted by the market anticipation of corresponding spasms of feebleness and discouragement on the part of the

public. The market price also values exceedingly temporary things, like managerial skill, which may die in a day with a particular genius, or be disrupted in a few weeks by serious labor disputes. This market value disregards the hazards of the art in response to a perfectly general disposition on the part of men to regard a particular state of mechanical art as permanent, and to accept an advance in the art as either an unforeseeable calamity, or, at best, a benefit to which an existing corporation has such superiority of access as to enable it to protect itself from complete destruction.

In particular cases of valuation the problem is further complicated by sentimental considerations. The attitude which a public service company has taken toward the people enormously affects the value of its property. Two corporations in the same service, with the same opportunities and with physical property of identical character, the one having the motto "The public be damned" and the other "The public be pleased," will have a wholly different value. A company which has maintained a mysterious process of concealment about its earnings or has earned and distributed extravagant dividends will probably be regarded as having enjoyed its fat years and be properly a candidate for its lean ones, while exactly a similar company, which is not suspected of having been prosperous, but is known to have had a struggle and not to have distributed more than just returns upon its investment, will find it easy to secure from public officers, with the approval of the public to be served, a generous attitude toward the valuation of its property and the adjustment of its rates.

Attempts on the part of companies to include fantastic items and to add to actual physical values extravagant percentages for omitted property, and for undefined and indefinite items of overhead, irritate both the public and their representatives, so that the problem of making a particular valuation is never free from difficult legal questions, distorting historical associations and sentimental elements which prejudice any attempt at a white light determination of value.

And yet the process is in all likelihood simplifying daily, and the relation of the Supreme Court to such valuations, when made, is clarifying with each decision. State and local tribunals to which the power to determine the facts is committed will not be interfered with unless their determination is clearly confiscation on the instalment plan. The devotion of property to a public use will gradually be recognized as a dedication to the public of a property interest in all the non-competitive advantages of public utility operation, and our efforts at valuation will finally result in a determination of the value of property assembled and in operation, excluding non-competitive advantages, and the values so fixed will be protected under the Fourteenth Amendment as the property of the owners of the utility.

DISCUSSION OF PAPERS BY HON. CHARLES A. PROUTY AND MR. WM. D. KERR
ON "THE MEANING OF CONSTITUTIONAL PROTECTION IN VALUATION"

BY A. L. VALENTINE

Superintendent of Public Utilities, Seattle, Wash.

I have read the able paper of the Hon. Charles A. Prouty on "The Meaning of the Constitutional Protection in Valuation" with approbation and have devoted to Mr. Kerr's interesting and complete paper on the subject a measure of earnest thought.

Mr. Kerr devotes no attention to the fact that when the question as to whether or not certain contested elements of public utility properties have "value," has been finally determined, the result will in but small degree only affect "rates."

As an extreme example, were the courts to decide that the great street railway transportation system in Mr. Kerr's own city had absolutely no "value" either for money actually invested, unearned increment of real estate values or surplus accruing from efficient operation, that finding could be reflected in a reduction of only approximately 25 per cent in the service "rate." While, were the courts to decide only that contested elements of public utility properties had no "value," that finding could only be reflected in a "rate" reduction of negligible percentage.

Rates for service of public utility properties are, therefore, subject only to slight variation by judicial decision. They are affected in major degree by operating charges and conditions which, in my judgment, being administrative, will never be determined by the courts. To be properly determined by regulatory bodies it will be necessary to have experts of national reputation at the service of such bodies to point out operating efficiencies and economies.

That the Supreme Court, however, will finally and fully pass upon the matters of franchise values, good will, "unearned increment," surplus accruing from efficient operation which, as I indicated, affect only in slight degree the service

"rate," within a generation, is hardly to be expected and is a matter which, in my judgment, will, because of the greater effect of operating economies upon rates, have lost the slight importance it now has long before that time.

When a corporation pays taxes for governmental purposes and thus assists in the maintenance of law and order, allows of educational facilities and aids in the development of commercial and industrial conditions and opportunities in so far as they are dependent upon governmental co-ordination and supervision, all of which elements tended to create value, that corporation performed a duty to the community over and above its duty as a public service corporation to give good service at reasonable rates.

This fulfilled duty, in my judgment, entitles corporations to the same benefit as accrued to any individual or "person" who paid taxes on real estate in proportion to the value which he and other taxpayers created.

"Unearned increment" has been hurled at this extra value, which in our country, properties both of corporations and of individuals possess, over and above that "value" it has in revolution-swept American countries, and large numbers of our people use the expression quite glibly.

To come back to the discussion. I would conclude with the statement that I cannot comprehend how, by any process of reasoning, the Supreme Court of the United States could eventually arrive at a decision that "values" corporations assist in creating by the performance of duties over and above their public duties, whether that help was rendered in the payment of taxes or in the exercise of resourcefulness, skill and foresight beyond the ordinary, should not be allowed to those corporations.

VALUATION AND THE FUTURE OF PUBLIC UTILITIES

By MILO R. MALTBIE

Former Public Service Commissioner, New York City; Member of Advisory Board to the Division of Valuation of the Interstate Commerce Commission

THERE are four principal directions in which valuations may be used:—capitalization, taxation, purchase and rate making. Probably less use has been made of valuations in connection with capitalization than in any other direction; but if records of actual cost are wanting, and if capitalization is to have a relation to property, a valuation is about the only standard that can be used. Obviously earnings, which may be used as a principal factor in determining the relation of bonds to stocks, are not satisfactory; for they are too fluctuating, and capitalization may not be expanded and contracted as earnings go up and down. Further, if earnings depend largely upon rates, and rates upon valuation, it would be more logical to use the ultimate factor and base capitalization upon valuation.

Let no one misunderstand. I do not now contend that a valuation should fix capitalization where the original cost of the existing property is known, or that securities now outstanding should be increased or reduced to correspond to a valuation; but it may be used, and doubtless will be in the future, to assist in determining whether additional securities should be authorized. Even where original cost is known, a survey of the property is a useful guide to the financial soundness of a utility. Indeed, it would probably be as unsafe for a public service corporation to neglect periodic surveys as it would for a grocer to fail to inventory his goods occasionally. If all additions and betterments are properly charged to plant and property account and if all withdrawals and retirements are properly credited, the capitalization of a company must of necessity reflect the cost of the existing property. But as a matter of fact, this is seldom done with exactness. Additions appear in operating expenses, or withdrawals are not reported to the accounting department; and the book accounts as a result do not reflect what actually exists. An occasional appraisal is, therefore, often necessary to show the extent of the discrepancies, provided always that the valuation is

along sound lines and not prepared to bolster a preconceived notion or to aid some financial coup. Valuations should reflect actual conditions; yet they may be made to distort the facts, just as easily as a mirror may be so shaped as to reflect grotesque figures which do not exist outside of the imagination.

VALUATIONS FOR TAXATION

The use of valuations for taxation purposes is probably the oldest and best known. But as there is the greatest variety in laws and methods, it is seldom that valuations made for rate making purposes may be used without many adjustments for taxation; and when earnings, net or gross, are the basis of assessment, it is only very indirectly that valuations are of any utility. Ordinarily, the appraisals of land and buildings will be consulted by assessors, and where a company has been representing that these have a low value and to the rate making authority that they are very valuable, it will find its position untenable.

The general trend will be towards an increase in assessments and in the amount of

taxes paid. Momentarily, this may mean a decrease in net earnings, assuming other factors remain stationary. But when an adjustment has been reached in all directions, the public utility will collect the added taxes from the users of its service, for the rates must be sufficiently high to enable the utility to pay all expenses, including taxes, and still leave a fair return upon the fair value of its property. So far as the increase in taxes represents a more equitable distribution of the cost of government, this readjustment is proper and desirable; but to the extent that it represents a shifting of burdens from the general property owner to the users of utilities merely because it is easy or may be accomplished without general opposition, it is improper and unjust. The tax that may be collected with the least squawking is not necessarily the one doing the least injustice.

PART XIII

VALUATION AND THE FUTURE OF PUBLIC UTILITIES

"It is not uncommon also for utilities to forget the effect of their claims upon the public and to drive the application of a rule to the extreme. They have not hesitated to demand their pound of flesh, little realizing that by so doing they may, in the long run, lose that to which they may be justly entitled. Public opinion gathers momentum slowly and often fails to reach those responsible for unwise action, but, when once aroused, it often sweeps on resistlessly and a corporation which by its unjust and unreasoning demands has forfeited public confidence often reaps the whirlwind. . . . Public confidence is one of the greatest assets which any corporation may have, and those who destroy it through their extravagant claims in valuation matters must face a responsibility which many would not care to assume."

CONDEMNATION OR PURCHASE

The appraisal of utilities in connection with condemnation proceedings, franchise grants and purchase by agreement has also been very common. The municipalization of water works has been productive of many valuations, and the earlier court decisions upon appraisal questions have related thereto. However, franchise conditions have often determined the general line of the inquiry, and even in condemnation cases the capitalization of net earnings has been such an important factor that an inventory and appraisal has not had the significance which has later been attached to it in rate cases.

The courts have not infrequently pointed out that there is a difference between condemnation proceedings and rate making. Doubtless this is true in certain directions, but it must become apparent that, as public regulation becomes more effective and vigilant, the two must approach a common basis. Where rates have been brought down to a fair return upon fair value, even the rule that authorizes a capitalization of net earnings would produce the fair value upon which the rates have been fixed. Where the price is fixed before the rates are reduced, it is obvious that a capitalization of earnings will justify an amount in excess of the fair value fixed in a rate case. Hence, if public authorities are watchful and never allow rates to get beyond a fair return, valuations in condemnation proceedings must approach, if not actually coincide with, valuations in rate cases. It follows that condemnation proceedings should not be brought, if the price paid is to be kept to a minimum, before the reasonableness of the rates charged has been determined, wherever the courts consider the capitalization of net earnings as a factor. It also follows that as regulation becomes more efficient, the importance of valuations for rate purposes increases.

These observations apply with special force to the work now being done by the Interstate Commerce Commission under the Valuation Act of 1913. In the recent rate advance cases, the Commission has confessed its inability to decide whether rates were too high in relation to the value of the property because it had no satisfactory evidence of value. It had, therefore, to adopt other standards, more or less unsatisfactory, because they were substitutes and approximations.

Now it is clearly apparent that, whether the first issue arising after the railroad valuations have been completed relates to rates or to purchase, the fair values to be found will be decisive of both. Further, the country will know for the first time the approximate cost of government purchase and of constructing a few

through lines as advocated by certain persons who seem to have lost faith in the success of public regulation. If those valuations will determine the basis of purchase and rates, they will naturally greatly affect the values of securities when there is a great discrepancy between the valuation and the capitalization.

RATE MAKING

The most important and general use now being made of valuations is for rate making purposes, and frequently it is assumed that all other factors are unimportant. However, it is the rate charged the public that is of ultimate interest, and in reaching this goal, many other factors are considered. For example, the stockholder receives the same dividends whether the rate making authority allows a return of 5 per cent on a value of \$1,500,000 or $7\frac{1}{2}$ per cent on \$1,000,000, and, for the moment, the consumer does not care which course is followed if only the total gross allowance to investors is limited to \$75,000. But operating expenses and allowances for depreciation must be considered; and if the company must provide for retirements, renewals and ultimate replacement of the property upon the basis of a value of \$1,500,000, the annual depreciation charge must inevitably be larger than if the property has a value of only \$1,000,000. A larger depreciation allowance means a larger total expense and a larger total expense means higher rates. Or, if it be stated conversely, under fixed rates the net return would be smaller and there would not be sufficient net earnings to pay the total return to capital of \$75,000.

But whatever importance may attach to other factors, it is certain that the future of public utilities and the attitude of the public towards utilities under private management will depend in large measure upon the principles followed in determining fair value. Perhaps this may best be indicated by a few concrete illustrations.

It is contended in certain quarters that it does not matter whether the public has given a private corporation a large part of its property or whether the corporation has been obliged to purchase all of it, and that a company is entitled to a fair return upon *all* property which it owns or uses, even though a large portion may have been given to it by public authorities or the users of its service to induce it to operate. This contention is not limited to physical property but covers franchises, permits and other grants whereby the public may have permitted a corporation to use streets, highways or public places.

For the purposes of this discussion, it is unnecessary to decide whether these contentions are correct. I

simply wish to point out at this time that a ruling upon these contentions will have an important bearing upon the future of all utilities. If commissions, legislatures and courts decide that public service corporations may legally require the public to pay rates sufficiently high to yield a return, not only upon the actual investment in the enterprise, but upon property, tangible and intangible, which the public has donated, everyone will forthwith proceed to ask himself whether it is just and whether a similar course shall be followed in the future. Will not the public decide that under such circumstances it were better that no aid should be given to corporations, or, if aid is necessary, that the public itself should control and manage its own utilities? Will it not be said that hereafter a corporation must agree that it will not enforce against a benevolent public a right which the public believes to be unjust and inequitable? Is it reasonable to assume that if the country had in the past realized that its own generosity would be turned against it and made the basis for higher charges indefinitely, it would have made the grants or donations which have been made so frequently? Would not the public rather have insisted that everything be paid for and nothing be given?

APPRECIATION IN LAND VALUES

Probably no single factor is of greater importance in the valuation of railroads than land. It is contended that in determining the fair value of railroad property the *cost* of land or rights of way is irrelevant and immaterial except to show how much more must be paid than the value of the land itself, and that present values shall be conclusive, upon the basis of the present value of adjoining land plus all expenses which the carrier would be obliged to pay if it were to acquire by condemnation its present right of way. The process does not contemplate that the entire influence of the railroads shall be removed and that the value of the land shall be estimated as if all railroads in the vicinity were not in existence; but it builds up an estimated value upon the assumption that the existing railroads are still there and another railroad is to be built in the immediate vicinity. There are many, of course, who claim this method is not only illegal but unjust, in that it makes the public pay upon a value which the public itself has created; and it is asserted that the method is illogical because it assumes a railroad not to be in existence and yet takes as a basis land values which would not exist if the railroad were not there.

However, I am not for the moment concerned with the justice or injustice of the plan. I merely wish to point out at this time that if the public must pay, through the rates charged, all losses due to wear, decay and disappearance of physical property, if the public

must stand all shrinkage in values due to the depreciation of property, and may not share in gains due to the appreciation of property, and must in addition pay a return upon such appreciation, all will pause to consider whether private ownership and operation of public utilities is not so unfair and burdensome under such a ruling that communities cannot afford to allow its utilities to get into private hands. On the other hand, if honest, wise and economical investment be made the basis of rates, and if the public may acquire utilities at any time upon the basis of a valuation which treats appreciation upon the one hand just as it treats depreciation upon the other, may not many communities prefer private management, knowing that their rates will have a reasonable relationship to an equitable basis and that an unbearable burden will not be imposed upon any community which attempts to supply communal needs through community action?

DEPRECIATION

Some of the most difficult problems in valuation work arise in connection with depreciation. This subject has two important aspects. In every rate case, a decision must be reached as to the amount of accrued depreciation and the allowance for annual depreciation in connection with operating expenses. It seems to be generally conceded, as decided by the United States Supreme Court, that physical property decreases in value as it is used and that the investment becomes impaired if no provision is made year by year to offset this decrease and for the ultimate replacement of property. There are those, however, who contend that public utilities have a peculiar characteristic which distinguishes them from other property in that they do not depreciate. These persons often contend, further, that while there is no accrued depreciation, annual allowances should be made in addition to maintenance and repairs for ultimate replacements.

One might point out the inevitable conflict of such contentions and show how contrary they are to everyday experience. But it is not my province to do so here and whether these contentions are right or wrong, the final decision will have a direct bearing upon the future of public utilities. Litigants may occupy inconsistent positions, but courts and commissions must recognize that the decision made regarding accrued depreciation must be consistent with that relating to annual depreciation, and that, if there is a constant diminution in value from year to year, provisions must be made out of earnings to offset this loss. As the Supreme Court has said, investors are not required to see their property decrease in value from year to year without recompense, but are entitled to collect from the public an amount to offset such diminution. It follows that, if it is finally

determined that property does not decrease in value, there is no necessity for a fund, no need to offset a loss which does not exist. It also follows that, if there is a decrease of 10 per cent per annum, there must be an allowance in operating expenses of 10 per cent per annum.

The public has at times been reluctant to recognize this principle, and partially because of its unfortunate experiences. Public authorities have permitted companies to accumulate large reserves in order to safeguard investors and to guarantee excellent and constant service in the future. The public has considered that these funds were in the nature of trust funds to be held for the service of the public and not for the benefit of investors except so far as they were actually needed to protect the integrity of the investment. In some instances, usually where new interests have secured control of the utilities, an attempt has been made to distribute these funds to stockholders, or in other words, to cut a melon. The public, seeing these funds disappearing and appreciating that when they have once been distributed in dividends they are no longer available for public use, have tried to prevent their distribution; and in some cases they have been successful, in others unsuccessful. The experience, however, has convinced many that, if reserve funds are to be used in this manner and are not to be preserved, the interests of consumers are in jeopardy.

In my opinion, this situation is most unfortunate. Public utilities cannot be kept abreast of the times without adequate and proper provision for depreciation. Companies ought to have funds with which to replace property not only when it wears out, but when it becomes inadequate and obsolete; and no utility can adequately serve the public unless it is kept abreast of the times, and new inventions and methods are adopted as soon as their utility has been demonstrated. If a niggardly policy is adopted regarding depreciation, the development of utilities will be retarded and communities will suffer; but if a generous policy is adopted and if corporations treat these funds as trust funds, the utility will benefit and the community will benefit. But it is impossible to expect the public to be generous towards utilities and have their generousities or liberalities of policy turned against them at a later date. In my opinion, that utility which opposes proper depreciation funds, or, if allowed to accumulate them, which proceeds to use them for other purposes, has not only broken faith with the public, but invited retaliatory methods which it will be the first to decry.¹

¹ The maintenance of a proper depreciation reserve does not involve the hoarding of cash in the bank. It may, under ordinary conditions, more wisely be invested in property, such as extensions and additions to plant.

INCREASING PRICES

Those interested in valuation work have been impressed with the marked effect of increasing prices. Recent valuations of property which has been in existence for a considerable period show an estimated cost of present reproduction far in excess of original cost. This is due, in large part, to the change in unit prices and to the fact that generally prices have increased. The adoption of the principle that fair value is based upon present unit prices means that today a utility is entitled to a considerably larger net profit than it would be if its property were valued upon the basis of investment or original cost. It means that stockholders will obtain larger returns, not because of any activity of their own, but because the general standard of prices has increased. If the increased production of gold is the cause of increasing prices, it means that because gold is now mined more cheaply and in larger quantities than when the utility was established, it is entitled to larger profits. Whether this plan is unjust is aside from the question here, but it is evident that if fair value is based on contemporary prices, stockholders will gain or lose not according to their investment, but according to facts over which they have no control. In a time of rising prices, this principle will stimulate the construction of utilities; in a period of falling prices, it will retard development. Further, it introduces a speculative element, for profits will not depend upon the efficiency of the management, but upon economic conditions wholly independent of the enterprise. Whatever may be the merits of speculation in general commodities, it has done far more injury than good in public utilities, and many of the evils which have been so vividly depicted are due not to policies adopted by investors, who were looking for a safe, conservative and reasonable return, but to the manipulators of utilities, who depressed conditions one day, inflated them the next, and then retired from the field with their profits, leaving to another group the difficulties of management under burdensome conditions which were inherited.

One might continue to analyze the various phases of valuation work and in each case show its effect upon the future of public utilities. There is scarcely an instance where the decision of any question will be limited in its effect to present or past conditions, yet nothing is more common than for a corporation attorney to look only to the present and to insist upon the adoption of rules which will bring momentary advantages.

It is not uncommon also for utilities to forget the effect of their claims upon the public and to drive the application of a rule to the extreme. They have not

hesitated to demand their pound of flesh, little realizing that by so doing they may, in the long run, lose that to which they may be justly entitled. Public opinion gathers momentum slowly and often fails to reach those responsible for unwise action, but when once aroused, it often sweeps on resistlessly and a corporation which by its unjust and unreasoning demands has forfeited public confidence often reaps the whirlwind. If the punishment fitted the crime and only those were

caught in the storm who were responsible for the deluge, the result might not be so unjust; but all utilities are apt to suffer for the misdeeds of a few and it is not always possible to discriminate between good and bad. Public confidence is one of the greatest assets which any corporation may have, and those who destroy it through their extravagant claims in valuation matters must face a responsibility which many would not care to assume.

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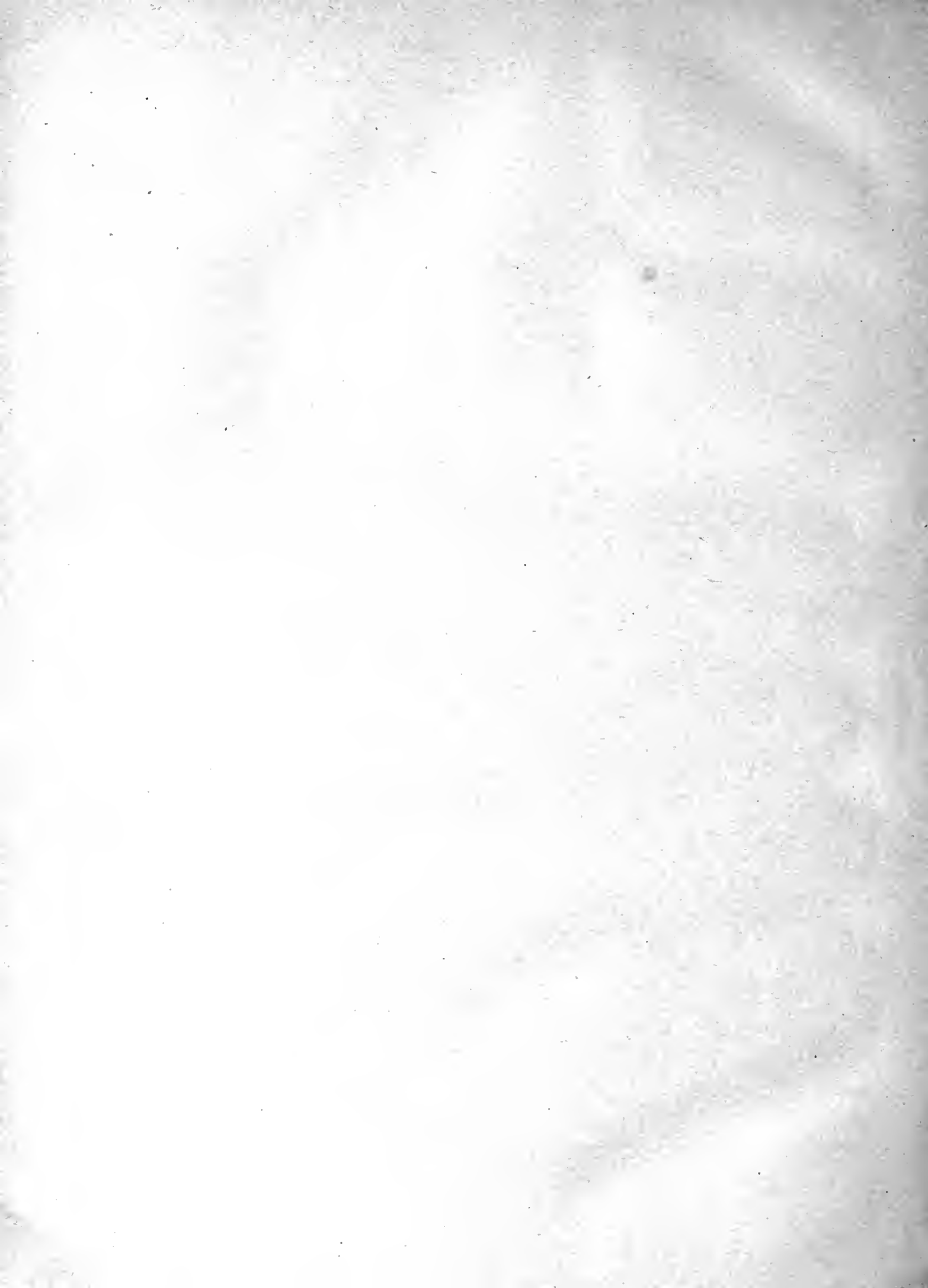
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